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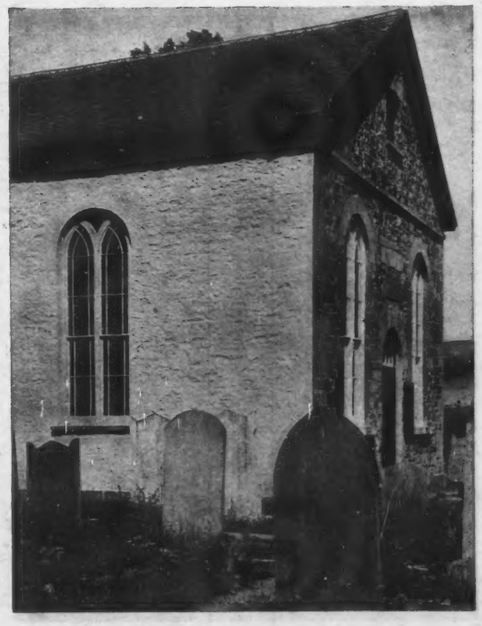

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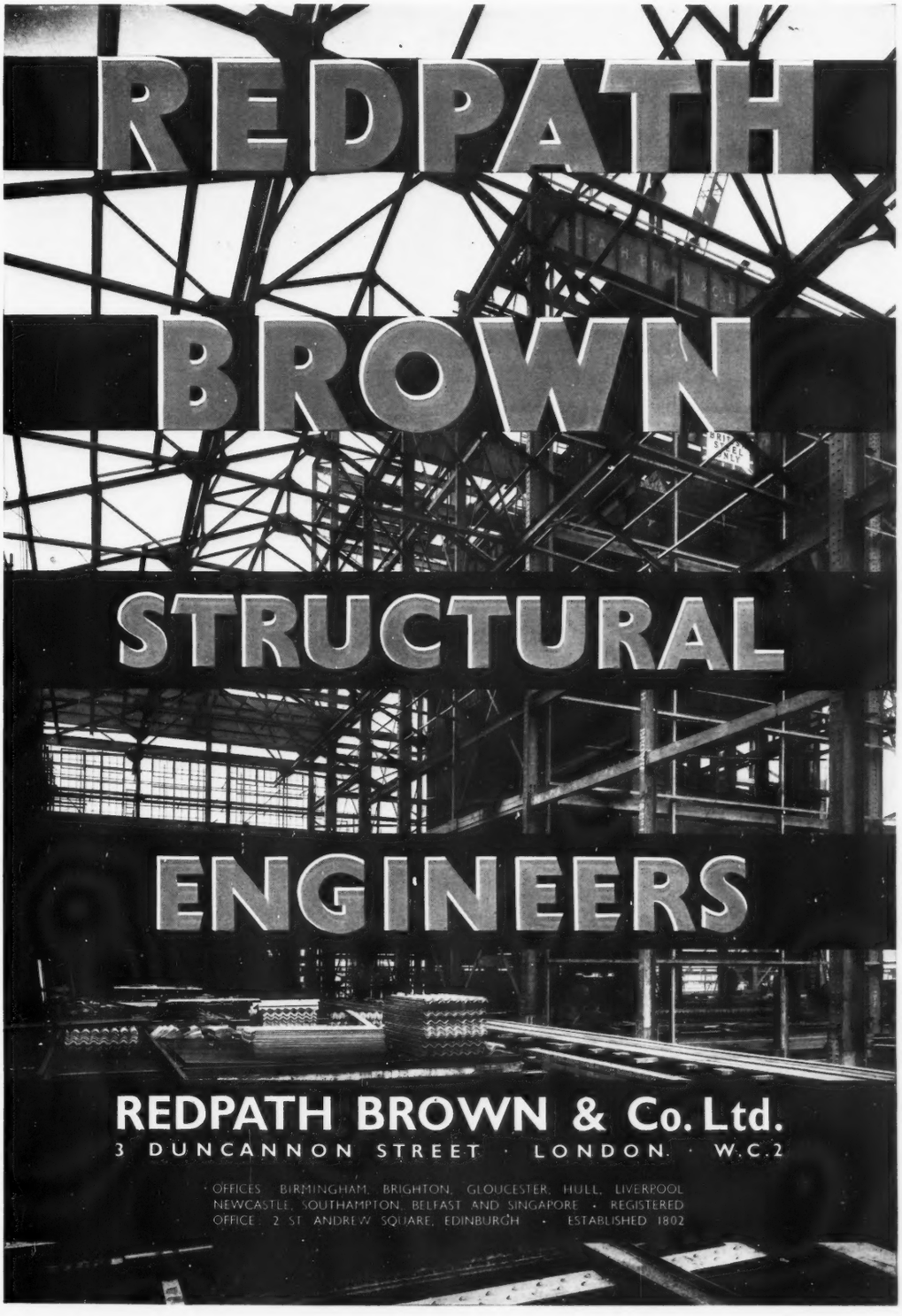
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CONTENTS

NONCONFORMIST ARCHITECTURE :
By John Betjeman 161

CURRENT ARCHITECTURE :
FLATS IN CHICAGO, U.S.A. George F. Keck, architect 175

HOUSE AT KINGSGATE, KENT. Brian O'Rorke, architect 179

Y.M.C.A. RECREATION HUT. Kenneth J. Lindy, architect 180

POLICE STATION AT BISHOP'S STORTFORD. Vine and Vine, architects 181

CRITICISM :
By James MacQuedy 183

A NOTE ON STEPPING STONES :
By J. D. U. Ward 184

BOOKS :
OUT IN THE MID-DAY SUN. By J. M. Richards. Review of "A Winter in Arabia" by Freya Stark ... 185

SHORTER NOTICES 186

THE ARCHITECTURAL REVIEW SUPPLEMENT :
DECORATION AS STORAGE :
7. DRESSING TABLES 187

FRONTISPIECE
NONCONFORMIST CHAPEL AT TENBY, PEMBROKESHIRE

ANTHOLOGY
Page 191

MARGINALIA
Page 191

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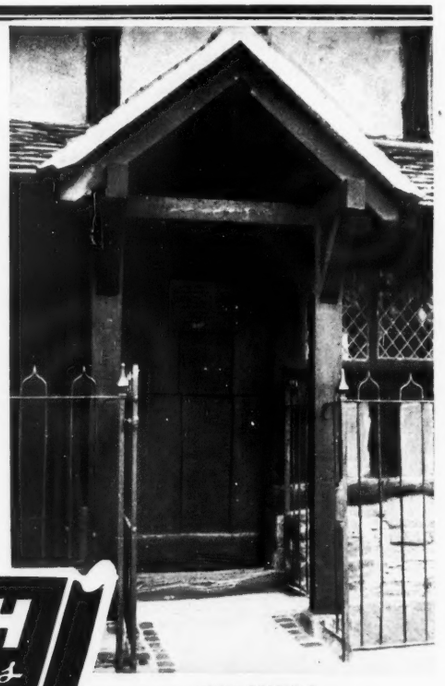

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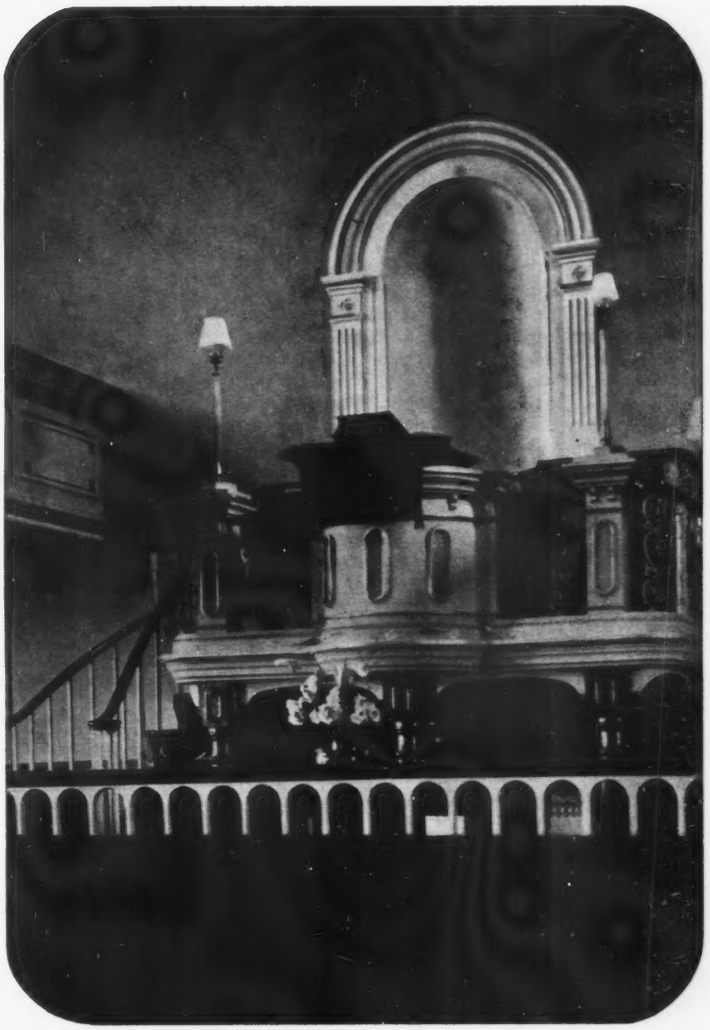
This building has an originality of decoration and satisfactory rule of proportion all its own. In this it is typical of a great number of mid-nineteenth-century Nonconformist chapels, especially the Welsh ones, whose vigorous architectural character is too little appreciated because they do not obey the rules of buildings conventionally admired. Chapels are the subject of the article beginning on the facing page. This one is the Bethesda Congregational Chapel at Tenby, Pembrokeshire, rebuilt in 1846: restored in 1871. Like many of its kind it derives a lot of its effect from the use of colour and texture. The walls are light yellow, plaster-faced. The woodwork, gable and dressings are painted burnt sienna. The inscription over the door is cut into a slab of dark grey slate. The headstone on the left is white and the draped urn and plinth are pink.

People call Nonconformist chapels "hideous" because they do not look at them, and those who are used to looking at architecture refuse to take them seriously for one or more of these reasons: that they are "modern" (that is, later than 1714); that they frequently do not obey the rules of either Classic or Gothic; or that the spectator is not himself a Nonconformist and has no knowledge of why or how these chapels were erected nor of the worship for which they were constructed. Actually, however, they form a category of buildings in which a true vernacular persisted most strongly into the nineteenth century, and the chapels of this period show all the vigour and originality we associate with vernacular architecture. This article traces their development and analyses their possession of this particular quality. The illustrations, therefore, although they begin with a few representative examples belonging to the conventionally "good" architectural periods, have chiefly been selected to portray a variety of chapels in vigorous native styles, the most vigorous and the most native being Welsh chapels of the mid-nineteenth-century.



Right, Mawgan-in-Meneage, Cornwall. The plain exterior (see 18) is luxuriously appointed within. As in all nineteenth-century chapels, the plan concentrates on getting in as many seats within sight and earshot of the pulpit as possible. The pulpit, after this has been done, was often found to be mean and so, in the seventies and later, Lombardic Italianate woodwork was designed after the manner of this Methodist interior. The Table is below the pulpit. Flowers are a twentieth-century innovation, herald of the liturgical movement in much recent nonconformity.

Nonconformist Architecture

By John Betjeman

THE church of the mediæval village or town was the centre of life. Houses were squalid and uncomfortable and it would have been as odd for a villager to say his daily prayers at home with all the family crawling about the single room, as it would be odd to find a villager saying his prayers on a week-day in the village church today. Church was where one went for everything. Schooling and business in the porch, festivals and plays in the church and churchyard, games in the churchyard (headstones in a graveyard were almost unknown until the seventeenth century and the poor were buried in woollen shrouds one on top of another in the graveyard, without a coffin, so that the quick danced upon the dead), and only the chancel and guild or private chapels, the priest's part, were screened off from the noisy, much-used nave, the people's part of the church.

Nor were the guild chapels, at any rate, apart from the people. The maltsters, let us say, of a district would erect an addition to their Church in honour of the patron saint of malting, they would subscribe for a window depicting the saint's life; less rich guilds would subscribe to keeping the candles burning, to a panel of stained glass, or a carved figure, or to part of the priest's stipend or the care or making of vestments. So it happened that the cottager of Catholic England looked on the church as his true home and took the same pride in his little bit of the church as he takes today in a new three-piece suite at home, or as his wife takes in the ornaments on her mantelpiece.

Churches really were the architecture of the people.

Since Elizabeth's day the church has become remoter and remoter, in architecture, from the people. The private chapel of the squire's family became the squire's pew, and when the squire was sold up in the last century it was cleared away by a "restorer" and became an awkward corner of ill-placed seats filled only on harvest festival or at the British Legion service. The rest of the church became the province of the incumbent and many a country church today is little more than an additional drawing-room for the rector's wife to which the family at the manor has presented some new but ecclesiastical ornaments.

Yet it is wrong to suppose that the Calvinism of Edward VI, the Romanism of Mary, the compromise effected by Queen Elizabeth, killed people's interest in God. The continual change in church services, the destruction of many ornaments for which the people had paid and which was part of their life, harmed the Catholic church in England, and Cromwell nearly killed it. But though they were no longer full Catholics, people still talked a lot about God. In Cromwell's time they talked about Him in public houses, at street corners, at home, during business and everlastingly in Parliament. The translated Bible, full stops, commas, mistranslations and all, was open to any who could read, and the pious English put their own interpretation on various scriptural texts, counting one text as more important than another. So arose Fifth Monarchy men, Muggletonians, Seventh Day Baptists, Millenarians among the lesser Cromwellian sects, Independents* (now called Congregationalists), Presbyterians (now mostly Unitarians in England), Baptists, and Quakers among the greater. A Catholic would say these sects arose because there was no

* The Independents started in England in the mid-sixteenth-century.

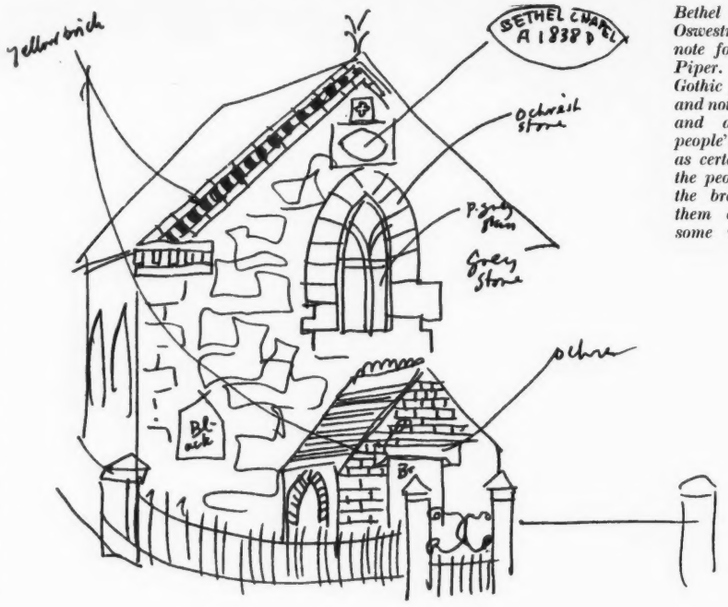
Church guidance in the interpretation of the scriptures. A Puritan would say that now at last people could read the word of God.

It would be drawing too hasty a conclusion to say that the early meeting houses were that architecture of the people which had been driven out of the churches, for the early Puritans were mostly intellectuals and their ministers were clergy who had been ejected from their livings, displaced heads of colleges and scholars. The congregations, according to the Lambeth returns, consisted of a good sprinkling of landowners, schoolmasters and merchants. The earliest meeting places were cottages and larger private houses, for ministers and congregation expected to be replaced in the church at some change of government.

When the Restoration brought about a High church reaction and later, when William III, the one and only Royal Calvinist, failed to insist that the Church of England was Presbyterian, Baptist, or Independent, the dissenters started to move out from their cottage meetings and to build their own conventicles.

The earliest Nonconformist places of worship, built specifically for worship, are all later than 1650. They were designed as preaching houses.* Usually they are plain, often delicate, compositions with windows on three sides and the pulpit approached by steps against the fourth. Sometimes there is a clear space in the middle of the room, for a communion table. Galleries round three sides were often added.

In their simplest form, in the Quaker meeting houses where the doctrine of the Society demanded no worldly ostentation whatever, the buildings have the quality of a well-scoured farmhouse kitchen—a stone or tiled floor, scrubbed oak open seats, white walls and clear glass windows. Sometimes in the older meeting houses the walls were covered to the height of a man's shoulder with rush matting. One might say the Quakers were the Cistercians of Nonconformist builders. The Unitarians (then Presbyterians) were the Cluniacs. They did not despise decorative treatment, angels' heads as exterior keystones,



Bethel Chapel, Morton, near Oswestry, Salop, 1838: a note for a painting by John Piper. Gothic but not correct Gothic; obviously a chapel and not a mission hall. Modest, and an expression of the people's idea of architecture, as certain inn sign-boards are the people's idea of art, where the brewer has not arty-fied them or destroyed them for some wretched trade-mark

broken pediments, excellent brickwork. The Unitarian Year Book gives the dates of the foundations of various churches, and where these have not been rebuilt much excellent work is to be found.

Among the best Nonconformist churches of this first phase, what we might call the theological style, are Friars' Street, Ipswich; Mary Street, Taunton; Churchgate Street, Bury St. Edmunds; Underbank, Stannington; the Octagon, Norwich. All these have lavishly furnished interiors, somewhat after the manner of a Wren church.

Of the buildings belonging to the Quakers, necessarily far simpler, Jordans, near Beaconsfield, is probably the best example, though I have attended numerous small country meetings where a scrubbed and white-washed austerity still recalls the strictness of old Friends. The earliest Baptist churches, notably Cote, Oxon (1657), have the austerity of Friends' Meeting Houses.

The first Methodist preaching house was not built until 1739 in Bristol and it still survives almost as it was, for Sir George Oately, the celebrated Bristol architect, has carried out a conservative and sensitive restoration of the old place. This building is the first of a larger series of chapels than that of the first group and I think we might name it the first building of the architecture of Enthusiasm.

Consider, first, the different motives for building Methodist chapels from those for building Unitarian, Independent, and even Baptist places of worship. The latter were built for congregations versed in theology, to hear the Word of God from Ministers who held similar views on the Word to those of the congregation.

When John Wesley died in 1791 there were 60,000 Methodists in Great Britain and 11,000 in Ireland; most of them were in the northern and western counties of England and in the north and east of Ireland. These people were mostly men who had not previously bothered about spiritual matters; they were workers from early and dismal industrial districts, half starved people who saw no hope of ease and happiness in this life and were attracted by the promises of indescribable ease and happiness in the next. Where Wesley or Whitfield lifted their voices, people fell down with groans and wrestled with the Evil One.

The first chapels to be built by the Methodists were meant to serve as overflow preaching houses when the Established church was either too far distant, too hostile, or too small in seating capacity for the numbers attracted by the new preaching. Like the buildings of the earlier group, they were designed to seat as many people as possible within a good view of the pulpit. Churches, altars and decoration were regarded as unnecessary, for there were such things at the Parish church. They followed, in plan, the "theological" preaching houses, but they were larger, flimsier buildings, nor did they scorn a bit of carpenter's or plasterer's moulding here and there by way of internal embellishment. They were erected mostly by pious merchants or landowners whose enthusiasm extended to their pockets. They were hardly any of them erected from the subscriptions of the people. Indeed enthusiasm in the late eighteenth century was as rife as Tractarianism was seventy years later and touched similar classes at the top, though it had a greater hold than Tractarianism over the people at the bottom of the social scale.

When great cities prospered after the depression following the Napoleonic wars, and Methodist merchants grew richer, stately chapels were built in the chastest Greek or Commissioner's Perpendicular. Liverpool, Manchester, London and Bristol still contain a number. But they were built at a time when education in architectural matters was confined to those classes which were rich enough to have an extensive education or to recognize established taste when they saw it. There was little to choose between an early nineteenth-century Methodist, New Jerusalem, Roman, Independent or Unitarian chapel in a large town (where most Nonconformist building at this time took place) and a Proprietary chapel or new chapel of ease erected for the Established Church. They did not have bells or towers, but their internal arrangements were similar. Enthusiasm was strong in parts of the Established Church. The pulpit dominated the altar and several octagonal, circular, and hexagonal churches were built for the Establishment (the Octagon Chapel, Bath; the Octagon Chapel, Wisbech; St. Andrew's Church, Dublin—circular—and a dozen or more) while those which retained the rectangular plan, also favoured by Nonconformists, had exceedingly shallow chancels and the pulpit was more than often in front of the Table. On the Nonconformist side, quite

[Continued on page 173]

* It is interesting to notice Mr. F. Etchells' observation that Wren seems to have been aware of the double nature of the Church of England, its Laudian and Puritan sides, for while St. Paul's has space for a hundred altars and could be a Catholic place of worship, his City churches are almost all preaching houses.

The Lady Huntingdon Chapel at Worcester, a late eighteenth-century red brick exterior, modest and adequate, still in the old "Builder's Jewel" tradition. Its more elaborate interior is shown on page 165. It belongs to a Calvinistic sect, founded by Selina Lady Huntingdon and now for the most part absorbed into the Congregational Union.

1

1 The Theological Style

This category represents the early, earnest, intellectually and spiritually convinced phase of Nonconformity, when it emerged from secret meetings and built its own conventicles—always on the plan of getting as many seats as possible with a view of the pulpit, whatever the sect. 1, Cote Baptist Chapel, near Bampton, Oxon, 1657. A sturdy, simple conventicle of Puritan times, in grey limestone among the willows, elms and flat landscape of the Upper Thames, miles from anywhere. Interior: high pews, white walls, gallery and clear glass. Neighbouring brooks and ponds suitable for Believer's Baptism. The simplicity of these Puritan chapels was deliberate and conscious. They were mostly built for people who believed and argued, not for people who believed and sang, or believed and shouted praise. They were presided over by expelled heads of colleges, rectors and banned divines who hoped one day that they would be re-instated. 2, entrance façade and interior of the Unitarian chapel at Bury St. Edmunds, early 18th century, in dark red brick with white paint. The Unitarians were the intellectuals of the time. They had no moral objections to decoration and built many lovely chapels in the classic manner with Wren-like exteriors and fine woodwork within. They were not allowed to build towers or spires and so they invented a style which readily distinguished their buildings from a church or a secular hall. 3, Friars' Street Chapel, Ipswich, 1700, with East Anglian plaster walls and white woodwork. 4, Underbank Chapel, Stannington, near Sheffield, 1742, in the local grey stone.

2

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2 The Architecture of Enthusiasm

These are all late eighteenth-century or early nineteenth-century buildings, erected in the second phase of Nonconformity when Wesley and Whitfield preached conversion and held out hopes of golden streets in the next world to those who knew nothing of gold in this. They are, therefore, simple and, where they have been paid for by rich town merchants, conform to the classic rules of proportion and detail and are often indistinguishable externally from contemporary buildings of the Establishment. Internally, the pulpit occupied the chief position, as it did in certain Established Churches built under the influence of Enthusiasm. 5, at Poole, Dorset, early nineteenth century, in white brick and yellow stucco. 6, Brighton Tabernacle, 1834, in yellow stucco with black paint. This building can now scarcely be seen, as a new block of offices has just been put up immediately in front of it, hiding it from the street. 7, a rural Methodist chapel, near Long Sutton, Lincs, in red brick with country builder's Georgian detail, typical of the late eighteenth century. 8, a town example at Leamington, in keeping with that provincial spa's sophisticated stucco architecture. 9, the Lady Huntingdon Chapel at Worcester (its exterior is shown on page 162): an Enthusiastic interior in a Chippendale Gothic style, with nineteenth-century liturgical movement additions. The clustered columns, cornices, gallery pews (prevailing colours buff, yellow and white), dark green walls, organ with stencilled pipes, stained glass and pulpit rails are Victorian. The entrance screens, not shown, have good early nineteenth - century coloured glass.

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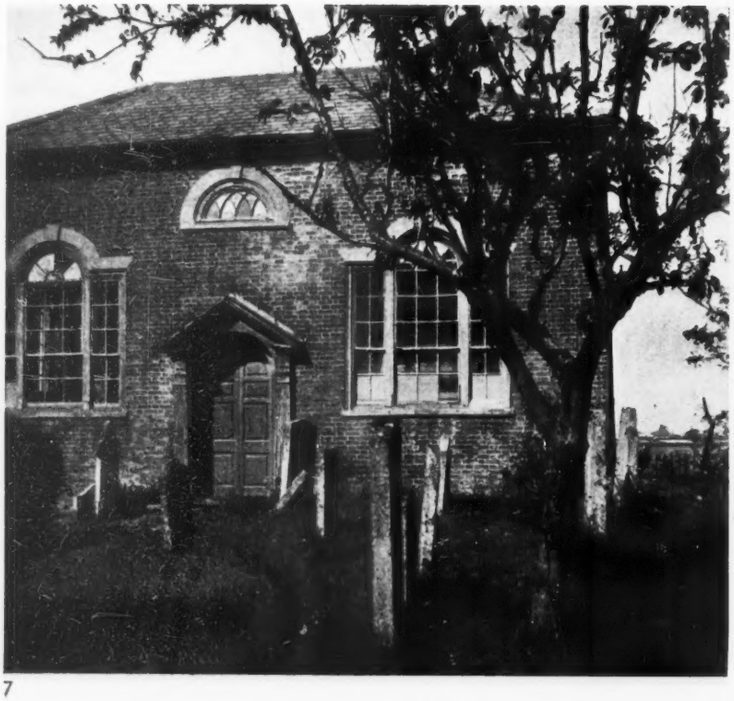

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3 The Growth of a Native Style

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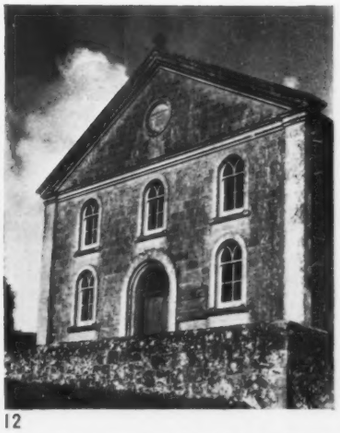

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These examples and those on the two pages following show Georgian correctness beginning to blossom into a native and local style. 10, Congregational Church at Market Harborough, Leicestershire, c. 1850. It is in white brick and pale yellow stucco and is fairly orthodox except for the device in the attic. 11, at Oundle, dated 1863, in grey limestone. It has the enormous pediment which became almost a hall-mark of the mid-nineteenth-

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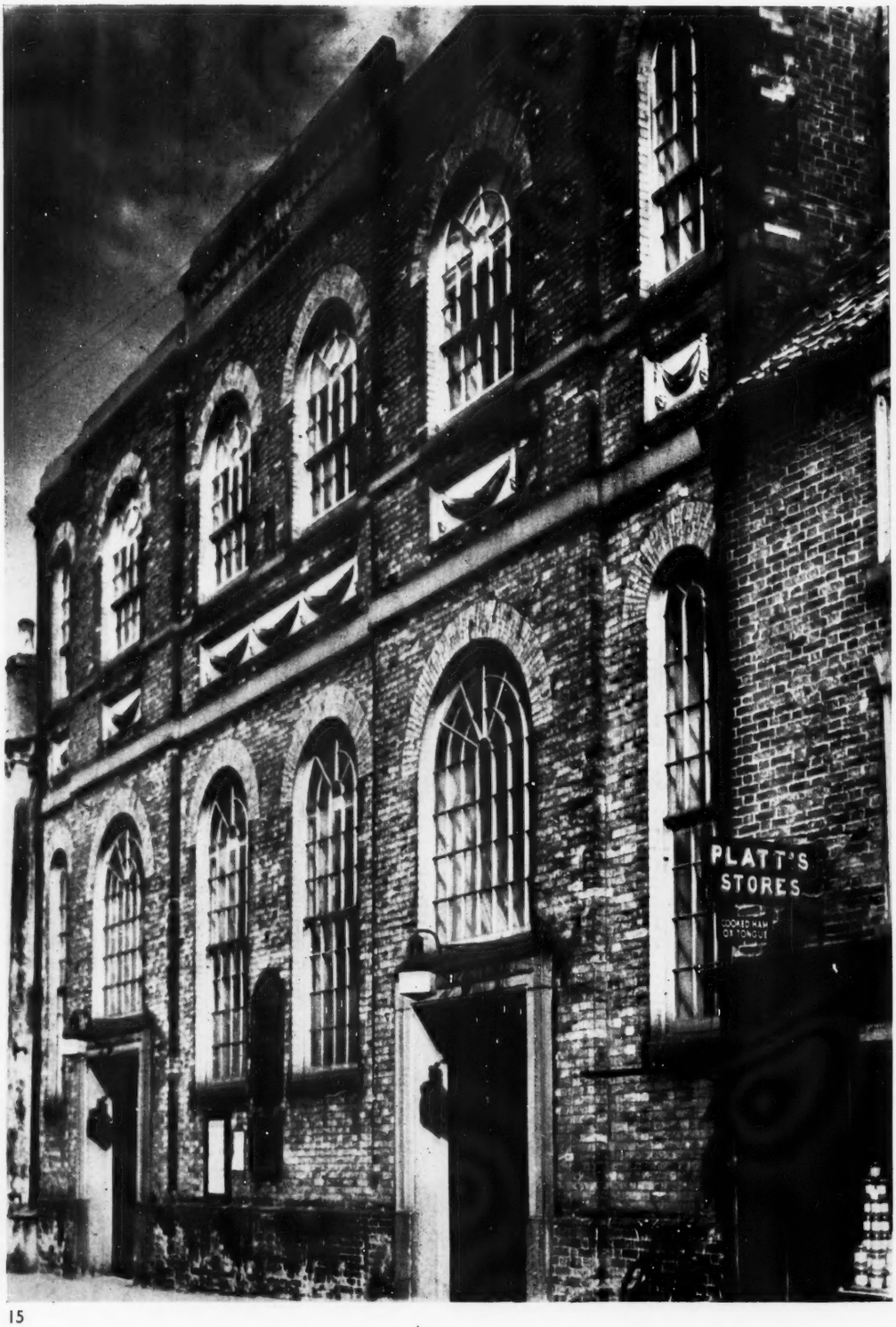

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century chapel, but is otherwise in the old tradition. 12, Methodist Chapel at Donhead, Wilts, c. 1860. In Chilmark stone with dressings of paler colour and again the large pediment : a Soane-ish door and Gothick glazing bars. 13, Methodist Chapel at Haddenham, Wilts, 1822. Village Enthusiasm with no architect, but a builder with an architectural tradition. Naples yellow plaster and white paint. 14, Congregational Church, Alcester, Warwickshire; a small town church, architect-designed in 1839, in an advanced Italianate style of the period, in yellow stucco and correct. Not a product of Enthusiasm. 15, Methodist Chapel at Louth, Lincs, dated 1835. Small-town Enthusiasm : not architect-designed, but by a builder with Georgian tradition and some Adam-style casts. The windows, fortunately, are not spoiled by the cathedral glass of the liturgical movement. They are painted white on the glazing bars and the brick is a deep red. The two rows of windows allow for a gallery between the first and second floors. It later became customary to bring the galleries across single long windows on the

The Growth of a Nat-

16

17

entrance front, in order to give a non-domestic appearance to the façade. 16, Methodist Chapel at St. Just, Cornwall, c. 1835. A fine barn-like structure with whitewashed walls, blue slate roof and white painted windows. Celtic ideas of proportion are maintained here. 17, at Blockley, Gloucestershire, 1835. This one is a throw-back, having a façade which, except for the unduly large windows and the wide door, is in the Bath tradition which often survived in stone architecture as late and as far east as this. It is in the local stone, with a grained wood door.

i v e S t y l e

4 The Native Style: English

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19

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Here we see the native or local vernacular style more fully developed. Unorthodoxy is the rule rather than the exception. 18, Methodist Church at Mawgan-in-Meneage, Cornwall, c. 1830. A yellow-washed preaching house raised, like 16, by the pence of the poor. The proportions again are Celtic. The pointed window and dark-grained oak door alone suggest a place of worship. 19, Methodist Church at Swaffham, Norfolk, c. 1860. Fanciful

21

22

style—a variation on 10—with a certain debt to Soane and Wightwick, though neither would have approved the original pediment. It is in white brick and has frosted glass with bright coloured borders. 20, Methodist Church at Wigmore, Hereford, 1867. Has the usual curious pediment, but a Gothic one to suggest the ecclesiastical, a gauntlet thrown to the Establishment; but plainly a chapel and in a Georgian Gothic style, even at so late a date. Warm red brick with stone dressings. 21, at Kimbolton, Hunts, 1840. The door with its broken pediment suggests the seventeenth century, while the brickwork is late Georgian. A most successful solution of the large roof gable, which normally becomes a top-heavy pediment. Yellow brick with stone dressings. The designer was a thoughtful and sensitive man. Note how the railings (perhaps accidentally) echo the pattern of the windows. 22, Congregational Church at Louth, Lincs, c. 1885. A more flamboyant solution, but nearly as successful, of the gable problem. A definite Nonconformist style appears here, neither Gothic nor Italianate, but English. Red brick with stone dressings. 23, Methodist Church at Tisbury, Wilts. A Nonconformist answer to the Establishment's Gothic revival. A mixture of all Gothic styles in Chilmark stone; battleship grey with a beautiful texture. The Georgian tradition survives in the two-storey window arrangement for galleries and in the Church of Ireland pinnacles. 24 and 25, two studies in texture, one in a Gothic and one in a Classic chapel. Texture is a quality to be found in all nineteenth-century Nonconformist chapels to a degree unusual in other buildings. It is a quality to be reckoned with and appreciated for its own sake, without any antiquarian reservations. 24, at Legbourne, Lincs, is in pale yellow brick with purple-brown railings. 25, at Broad Town, near Wootton Bassett, Wilts, looks as though it had been under water. It has grey-green plaster, frosted glass with star-patterned borders, and faded yellow plaster in the pediment of the porch. The railings are bright red-lead colour. 26, the grandest native baroque: Methodist Church at Great Yarmouth. The designer has mixed his styles ingeniously and hidden the two-storey effect necessitated by galleries behind his attached columns, whose central arch obeys no accepted standard, yet gives a unity to the whole composition and helps to modify the effect of what would otherwise be a top-heavy pediment.

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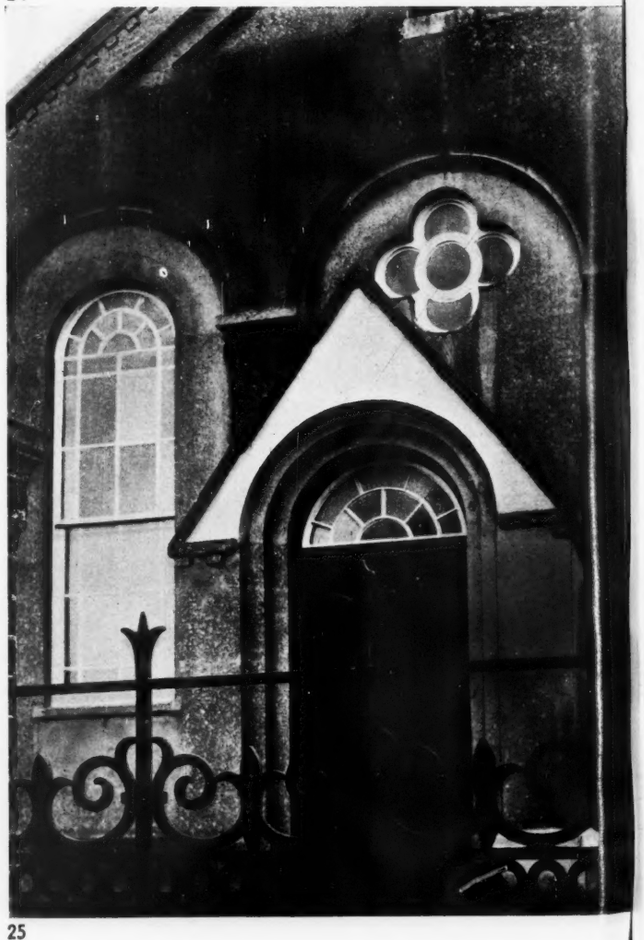


25

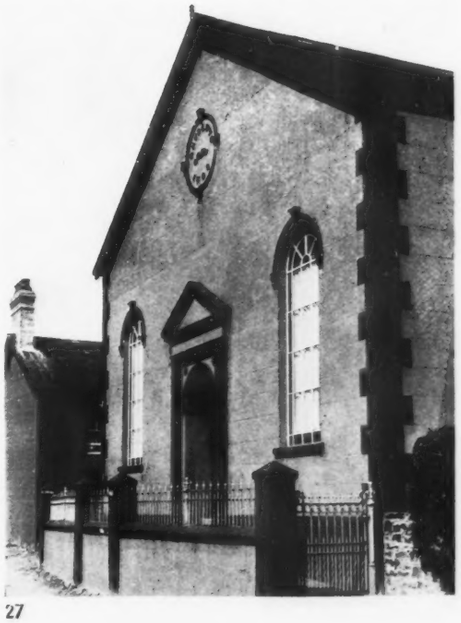
26

The Native Style: English

26

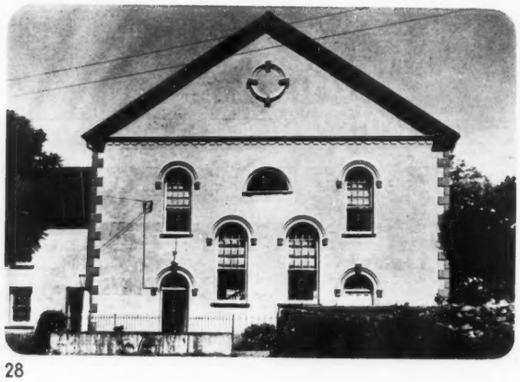
5 The Native Style: Welsh

There is certainly such a thing as racialism in ecclesiastical architecture. Though a Welsh chapel may not be easy to distinguish from a Cornish one, both are quite different from English chapels, for both are Celtic. There are far more chapels in Wales and Cornwall than in the rest of Britain. They are national emblems, a special sort of chapel, just as the Catholic church in Brittany (which never had the re-formation and Puritan re-action of its Celtic neighbours) is a special sort of Catholic church. In Wales the sects differ, but the chapels do not differ with the sects. The chief characteristics of Welsh chapels are: a disregard of the established rules of proportion and a special law or lawlessness of proportion for each building; strong colour-schemes —sky-blue plaster and ochre grained oak doors, for instance, with white marble monuments in the foreground, or Naples yellow plaster and purple-brown dressings with white woodwork; local stones and marble and slate skilfully and freely used; a tendency to façadism; originality in the arrangement of windows, doors and tablets, but little structural originality (compare Great Yarmouth, 26, with



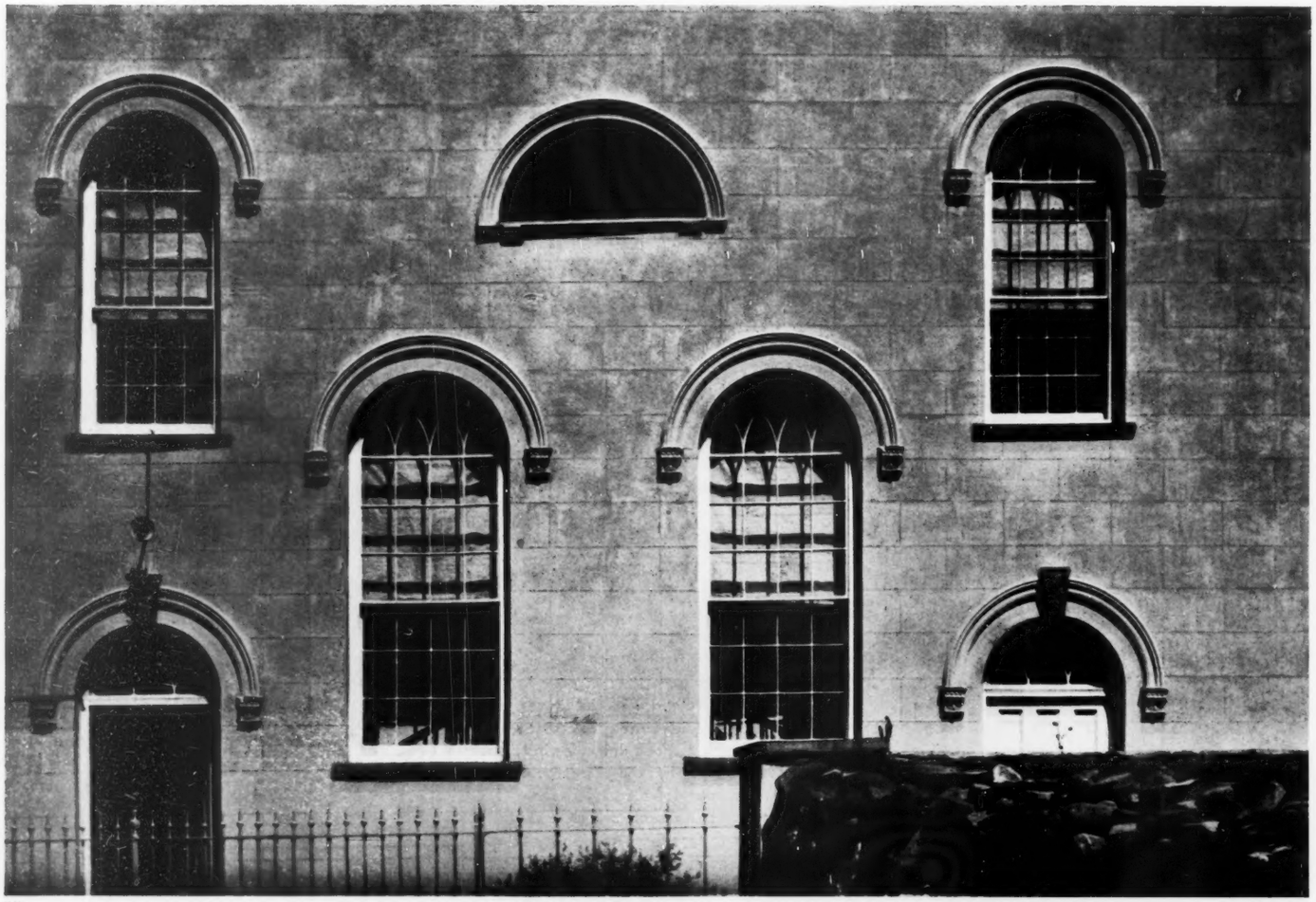
27

The Native Style: Welsh



28

Aberayron, 33); and an originality of mouldings and "styles." The spectator's eye is often drawn to particular details on which the ingenuity or fancy of the designer has been especially concentrated. These details include the pattern of the glazing-bars in windows and fanlights, stone dressings (often of a different colour from the walls), railings in cast or wrought iron (an important detail of chapel architecture because of the almost universal practice of setting the building back a little way from the road with railings across the front), the gates and gate-piers that go with the railings, gable-ends, keystones, dedication stones, incised or relief lettering and glass. The glass contributes a lot of the richness of colour in chapel façades. It is not pictorial but patterned in plain but strong colours—crimsons, blues and greens—arranged as borders or as part of the pattern of the fanlights. The jewel-like effect of this glass is well shown in the drawing on page 174. The lettering on Welsh chapels would make a study in itself. It is worked into the design of the façade in many ways, sometimes spread out across the gable in relief, as at Blaenconin, 34, sometimes framed in a circular or semi-circular panel, as at Rhydlwyd, 27, Llanon, 28, and Tenby, frontispiece. These details, though derived individually from illustrated catalogues, are used with the freedom and vigour that give vernacular architecture its charm. 27, a typical wayside Welsh chapel at Rhydlwyd, a hamlet between Tregaron and Aberystwyth. The colour is striking: bright yellow and venetian red, a colour-scheme that is carried through even in the details and on the wall in front. The glass has green borders with dark blue top lights. The date is 1899, and the painting no doubt in the original scheme.



29

28 and 29, Llanon, Cardiganshire, c. 1850. A more imposing one, illustrating two of the characteristics listed above: a marked originality in the arrangement of the windows and in the very vigorous mouldings. The walls are French grey, the dressings darker grey and the doors white. The composition centres on the black slate semi-circle with white lettering. This façade, 29, can be compared with the orthodox English Georgian façade of Cote, on page 163. 30, the interior of the Llanon chapel. Pitch-pine pews; pale yellow walls. The awkwardness of having dazzling windows either side of the pulpit would not have occurred in many English chapels of this date. 31, Tyrrhos, Cilgerran, Cardiganshire, c. 1840. Greyish-brown plaster with lighter patches; the circular slate tablet very dark blue-grey with white lettering. 32, Belgelley, Pembrokeshire, 1866. Blue-grey walls, paler granite dressings; purple-brown door and railings; grey slate roof. 33, Aberayron, Cardiganshire, c. 1880. A rather dull, rule-of-thumb designed, town chapel which offends a little in monochrome because it is too imitative of correct classic to excuse the huge pediments. It is in pink brick with yellowish stone dressings. 34, Blaenconin, on the Cardigan-Narberth road, c. 1830. Pock-marked grey walls, with red-brown grained doors and white glazing bars. 35, Llansadwrnen, near Laugharne, Carmarthenshire, c. 1850. Façade of warm, streaky-grey granite; side walls of pale yellow-washed stone; white paint; blue-grey slate roof.

Most of the photographs on these pages, including all the Welsh ones, were taken by John Piper, the topographical artist, who saw them not as "amusing" or "remarkably hideous" subjects, but as additions to the landscape—a flash of colour and vigour in Welsh bleakness or English mellowness. 3 and 4, illustrating the Ipswich and Stannington chapels, are by courtesy of Mr. Ronald P. Jones, author of "Nonconformist Church Architecture."

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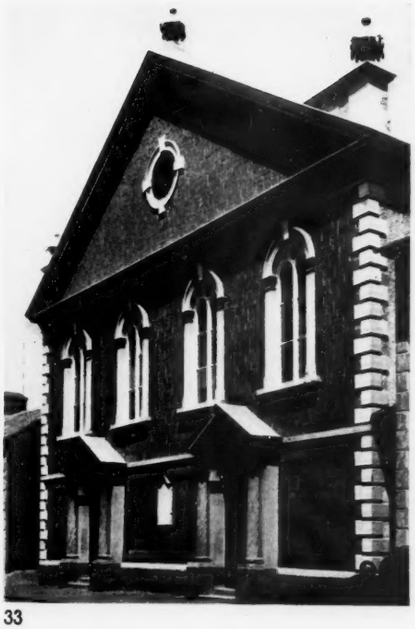

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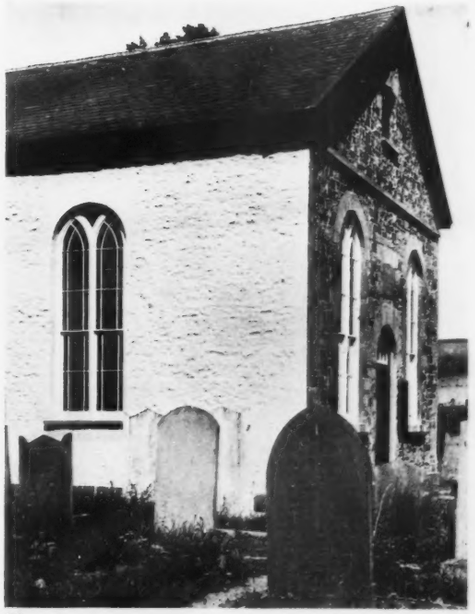

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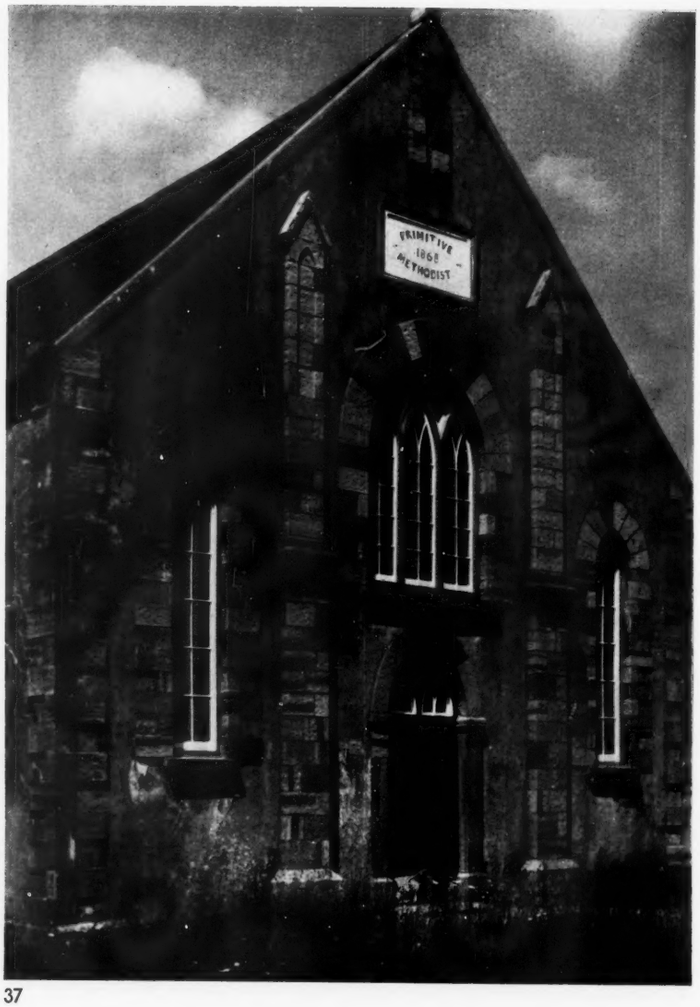
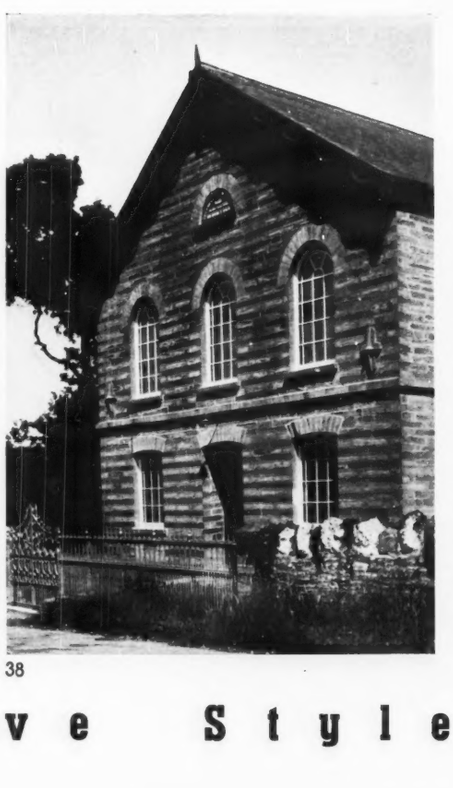


37

Four chapels in south-west Wales of the 'sixties and 'seventies of last century. 36, between Cardigan and Aberayron: a usual composition for the district, with as reckless and effective a use of simple shapes as nature shows in the foreground monkey-puzzle. The walls are pock-marked grey, with mid-purple brown paint. 37, at Kilgelly: Pembrokeshire Gothic of 1868. In granite and rugged enough to belong to the landscape. Apart from the ubiquitous steep gable the same arrangement of windows and other features is apt to be met with in one chapel after another (for instance, 36 and 37 are the Classical and Gothic versions of the same theme); but monotony is avoided by original detailing and the individual handling of texture and colour. 38, a beautiful use of stone of two colours at Peny-bryn, Cardiganshire, set off by the simple barge board and a remarkable wrought-iron gate. 39, another classical arrangement with duplicated instead of central door: simple and austere. It stands on the coast road that runs from Cardigan northward.



38

39

The Native Style: Welsh

[Continued from page 162]

an Established appearance was obtained, e.g. at the Wesleyan Chapel, Stanhope Street, Liverpool (c. 1820) where a contemporary account says " A powerful, fine wind organ, by Bewsher and Fleetwood, gives solemnity to the services; and the ' semi-religious light ' falling through an oval window of stained glass, executed by Messrs. Lyon & Son, imparts a sacred shade to the communion table."

The architecture of enthusiasm reflected the cultivated taste of a class which had not yet lost its authority. The difference from the Establishment was only one of plan, and often that difference was slight.

Where, in the country and in small towns, there was less wealthy patronage for the enthusiastic chapels, the buildings were unpretentious and what the *Little Guides* would call " barn-like " structures, an epithet which those guides apply to many a not dissimilar late eighteenth century church. By " barn-like " I mean serviceable structures obeying the traditional rules of proportion and solid craftsmanship to be found in all builders' assistants from *The Builder's Jewel*, to Nicholson. The interiors were often wholly delightful: pale pink walls, Chippendale Gothic ceilings, high grained-oak pews, white gallery fronts and double rows of clear glass sash-windows round three sides of the building, while against the blank fourth wall rises a fine mahogany pulpit, sometimes inlaid and moulded. The town of Bridport, Dorset, has two little-spoiled chapels of the enthusiastic period, comprising several of the features which I have particularly in mind.

At last we come to the most interesting phase of Nonconformist architecture, that which shows more surely than any Victorian Established church whether high, low, broad, Gothic, Romanesque or Classic, what was the true architecture of the people. Not since mediæval days had the people clubbed together to adorn a place of worship and this time it was not a shrine but a preaching house. In mining districts and lonely villages of Wales, among the gleaming granite and slate of Cornwall, down the brick red streets of Leeds, Belfast, Liverpool and Manchester, in almost every city and corrugated suburb of Great Britain and the Six Counties Area, wedged in on the common land beside country houses and red and blue among the thatched roofs of southern villages or the stone roofs of northern ones, stand the chapels of the mid-nineteenth century. Despised by architects, ignored by guide books, too briefly mentioned by Directories, these variegated conventicles are witnesses of the taste of industrial Britain. They try to ape nothing. They were anxious not to look like the church, which held them in contempt; nor like a house, for they were places of worship; nor like a theatre, for they were sacred piles. They succeeded in looking like what they are—chapels, so that the most unobservant traveller can tell a chapel from any other building in the street with unqualified certainty.*

The nineteenth century was a period of great religious revivals and this is not the place to examine their causes. The chapels were built as the result of those revivals and they represent pennies saved which might otherwise have been spent on drink, or profits from tiny shops and lean farms and gardens where farm workers had toiled into the night. They contain, more often than not, a social hall and schoolroom for the many P.S.A. meetings, groups, Fellowships, prayers and study meetings which occur on every weekday in a thriving Nonconformist community. They are the public equivalent of the parlour mantelpiece. All sorts of people connected with the chapel contributed their bit; the local builder supplied the labour and the plan; the ironmonger the cast iron railings and the lamps; the timber merchant the wood; a builders' merchant gave of his best in ridge tiles, stonecaps and dressings; another builder undertook to look out coloured glass and window frames; carpenters in the congregation fixed the pews; painters did the graining and the stencilling; the linen draper looked to the cushions and coverings; and when it was all finished the stationer at his own steam press produced the illustrated account of the opening ceremony. Those who had no trade or craft directly connected with the chapel subscribed all they could. Pitch pine pews, green walls, brass, Lombardic and handsomely painted pulpit, lamp brackets, carpeted alleys, stencilled texts and homeliness—it was better than the best house in the circuit. And yet it was built more on the lines of a pre-Reformation Catholic church than the correctest Pugin or boldest Butterfield. These were indeed the thresholds of a better world than this, the brick and stone expression of individual conversion and acceptance, not the stilted copying of a religion based on Prayer Books and Missals and idol worship. This was the Liberal vote.

It would be a pleasure to try to trace some individuality of style belonging to each of the denominations of Nonconformity. But this is possible only in the most general way. In England the five chief divisions are Methodist, Congregational, Baptist, Brethren and other denominations. Wales is a separate study and Scotland does not come within the scope of this article.

The Methodist church today is a Union of various Methodist Societies which sprang up so soon as Wesley's followers started to ordain their own ministers without the medium of a Bishop of the Church of England. The oldest were the Wesleyan Methodists and on the whole they were the richest. Their buildings, when they are not of the chaste, enthusiastic period, were rebuilt quite late in the nineteenth century and in a solid style generally faintly echoing the ancient Gothic style of the established church, externally at any rate.

The Primitive Methodists broke from the Wesleyans in 1810. They were humbler and more wildly enthusiastic people than the Wesleyans. They favoured camp meetings, female preachers, and the uttering of loud ejaculations during inspired prayers. By 1851 they had 3,000 chapels. Their architecture is very rarely Gothic; more often than not, tiny structures on waste spaces by the roadside in the country or high flimsy looking Italianate barns in the towns. They employed architects more rarely than any other denomination.

The United Methodists arose in 1850 and were an amalgamation of various offshoots from the original society. Their buildings were humbler than those of the Wesleyans and abound in Cornwall and Durham.

Humbler, too, but unclassifiable, are the buildings of the various other branches of Methodism—New Connexion, Calvinistic, now united, except for the last named, in the Methodist Church.

Congregational churches are definitely more easily identified than others. These churches have each their own government but belong to a central Union whose headquarters are the freestone Memorial Hall in Farringdon Street (1874). They are a survival of the original Independent churches of the seventeenth century and have preserved a certain traditionalism in their architecture, even in their later nineteenth-century buildings. Congregational churches are more sedate and less home-made looking than those of any other denomination. Often an architect was employed. The earliest ones of the seventeenth and eighteenth centuries in Somerset are imposing classic buildings. That at Frome is famous. Until about 1860 nearly all Congregational churches were built in a classic style, a public-worship variation of the middle class villa of the date, running through from Greek to Roman and Italianate.

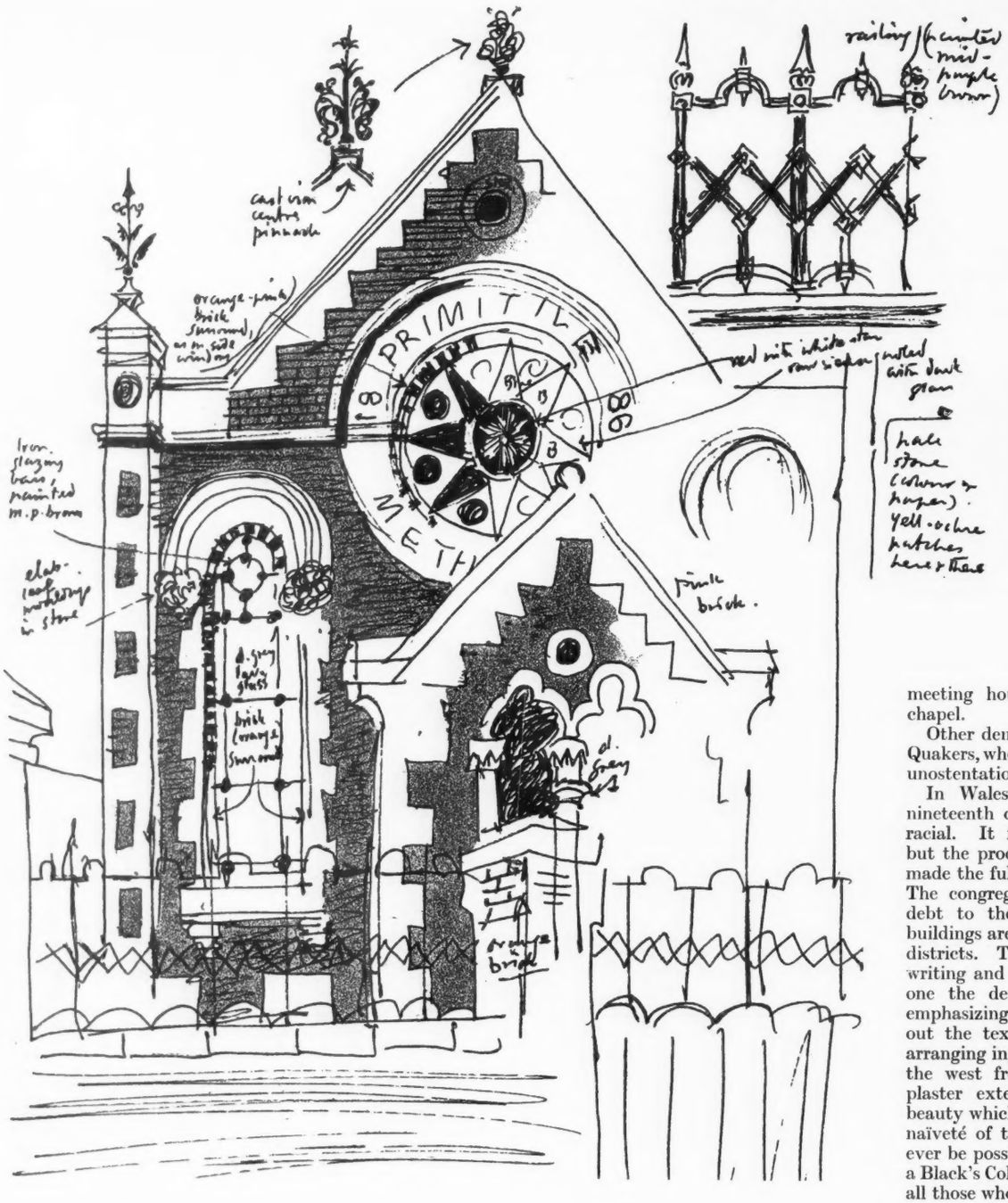
* I only know of one exception—the Circus Church, Portsmouth (if it still stands), which looks Nonconformist but is very low Church of England.

6 The Return of the Architect

40

41

An early and a recent example of the modern tendency in chapel building, a consequence of the liturgical movement, to return to conventional architectural styles. These buildings are no longer vernacular. 40, *Free Methodist church at Louth*, 1854. *A fairly correct classical façade, probably from an architect's design, acting merely as a mask to a chapel on the usual plan. It is not an ingenious solution, as at Great Yarmouth*, 26, *or Louth*, 22, *or Kimbolton*, 21, *of the difficult problem of how to make a two-storey main façade into an imposing entry to a place of worship. It is a sop to the conventions.* 41, *Blaenconin, the new chapel built within the last few years alongside* 34. *No originality in texture and the tracery distinctly ecclesiastical and worthy of any minor imitator of Bodley's work for the Establishment. The liturgical movement in nonconformity turns " chapels " into " churches," puts flowers on the table, " cathedral glass " in the windows, blue hangings and unstained oak by the pulpit and allows the building to be open for private prayer. The arrangement of the windows suggests a chapel and so does the large but not very successful gable. A hard texture—brown stone, with yellowish dressings designed to give an ancient effect, which time will not mellow into the desired semblance.*


railing (in cluster mid-pingle (inner)
cast iron centre pinnacle
orange-pink brick surround
PRIMITIVE METHODIST
red with white stone
roofed with dark grey
hale stone (colour & shape) yell.-ochre patches here & there
iron glazing bars, painted m.p. brown
elab. roof gathering in stone
pink brick.
d. grey leaded glass
brick (orange surround)
d. grey
orange brick

Methodist church at Bishopstone, Wilts, 1886 *: note for a painting by John Piper. A vigorous design in red and yellow brick, standing below the North Downs. It is composed entirely from the builders' catalogues which determine the styles of most nineteenth century chapels from* 1830 *onwards. But Welsh chapel building relied more on native talent. It is clear from this drawing how important a part the glowing coloured glass plays in the pattern of a chapel façade.*

Possibly because there was something traditional and respectable about Gothic towards the latter half of the last century, later Congregational churches are Gothic and Basil Champneys' Mansfield College, Oxford (1889–90) is one of the best bits of Perpendicular Revival in that city.

The Baptists arose from lethargy in the late eighteenth century when they started their great missionary effort. The General Baptists (not to be confused with the Strict and Particular Baptists, who are small and Calvinistic) are the largest body of Nonconformists in the world and their largest following is in America. In England the Baptists made their greatest progress in the 1860's, when Spurgeon was one of the most famous men in England. They increased threefold. Their new churches had some of the traditionalism of the Congregationals. For the most part they built large classic conventicles of which that at Newington Butts was the cathedral. Their architecture has never been sufficiently studied and it would be a good thing if the Baptist Historical Society were to produce a record of their chapels as thorough as that produced by the Unitarians.

Plymouth Brethren are one of the few Nonconformist bodies which is still increasing. They are divided among themselves, but their meeting places can be distinguished from others by the board which generally says

THE LORD'S DAY.

Breaking of Bread, 11 *a.m.*

The Gospel will be preached here (God Willing) 6.30 *p.m.*

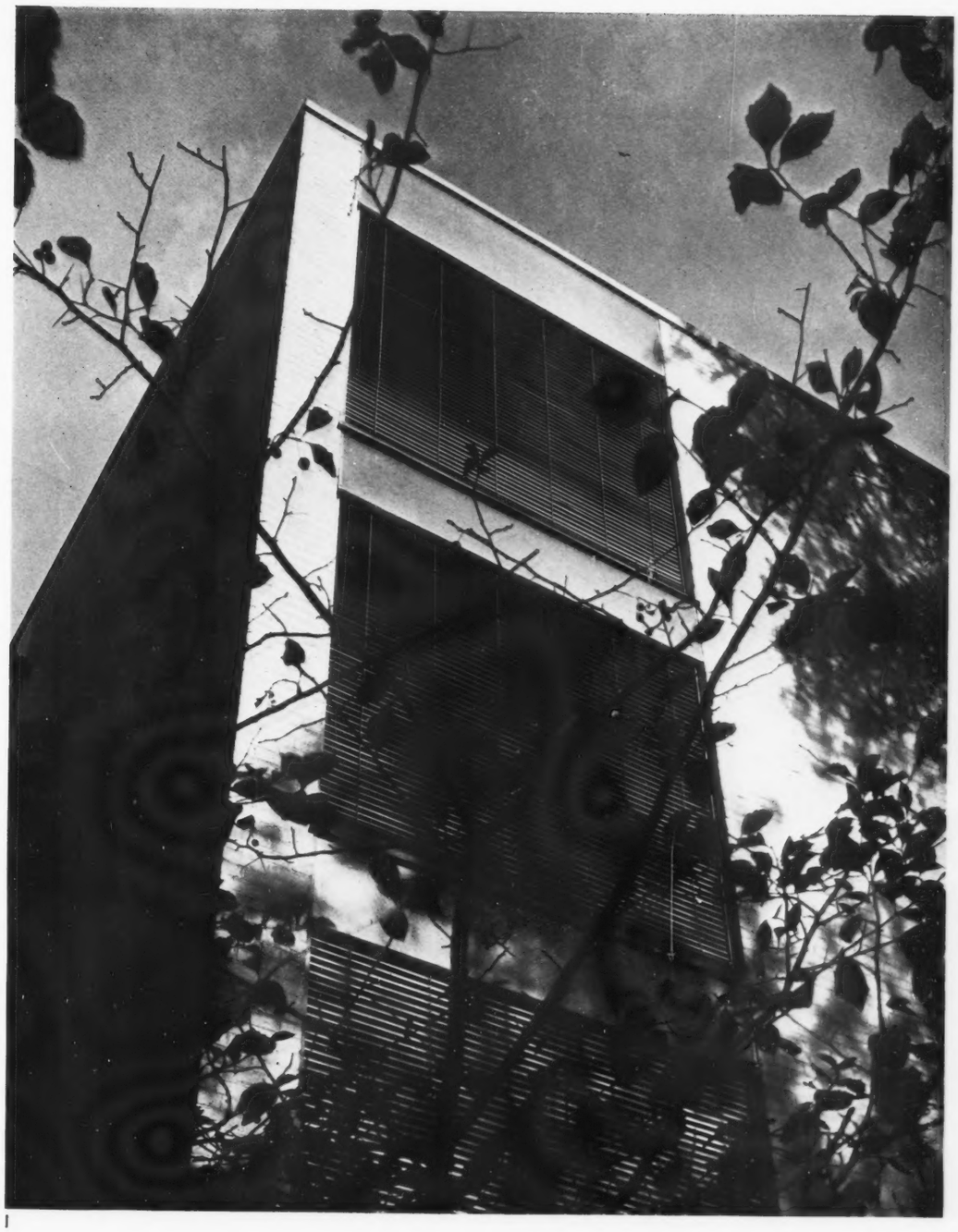
The sect is of nineteenth century origin and its buildings are a cross between the Quaker meeting house and the Primitive Methodist chapel.

Other denominations in England, except the Quakers, whose meeting houses remain resolutely unostentatious, are unclassifiable.*

In Wales the chapel architecture of the nineteenth century is not denominational but racial. It is hardly ever architect-designed, but the product of a local contractor who has made the fullest use of an illustrated catalogue. The congregations are often, to this day, in debt to the contractor for his work. The buildings are essentially local and vary with the districts. They have the quality of good sign writing and a vigorous style of their own. In one the designer will have concentrated on emphasizing the windows, in another on bringing out the texture of the stone, in another on arranging ingeniously the doors and windows of the west front, in another on colouring the plaster externally. These buildings have a beauty which is apart from date and akin to the naïveté of the Douanier Rousseau. Should it ever be possible to produce colour books again, a Black's Colour book of Welsh Chapels will send all those who are not dyed in antiquarianism to the mining villages of Wales.

Since about 1910 there has been a liturgical movement in many Nonconformist churches and this has affected new building. Unitarian churches now have chancels; Holy Tables have bunches of flowers on them and the pulpit is losing its old position of predominance. Even Methodist churches have a sober look and may be mistaken, externally, for a mission church of the Church of England. The two styles usually adopted are either Perpendicular with a touch of *art-nouveau* and terra-cotta about it, or Christian Science Romanesque. Indeed the new buildings of Nonconformity lack the individuality and strong character of those scrubbed conventicles of the seventeenth and eighteenth centuries or the gigantic preaching houses of the Victorian age. The new buildings are not the architecture of the people.

*** I am not including the splendid buildings of the Catholic Apostolic Church under the heading of Nonconformist architecture.**



1

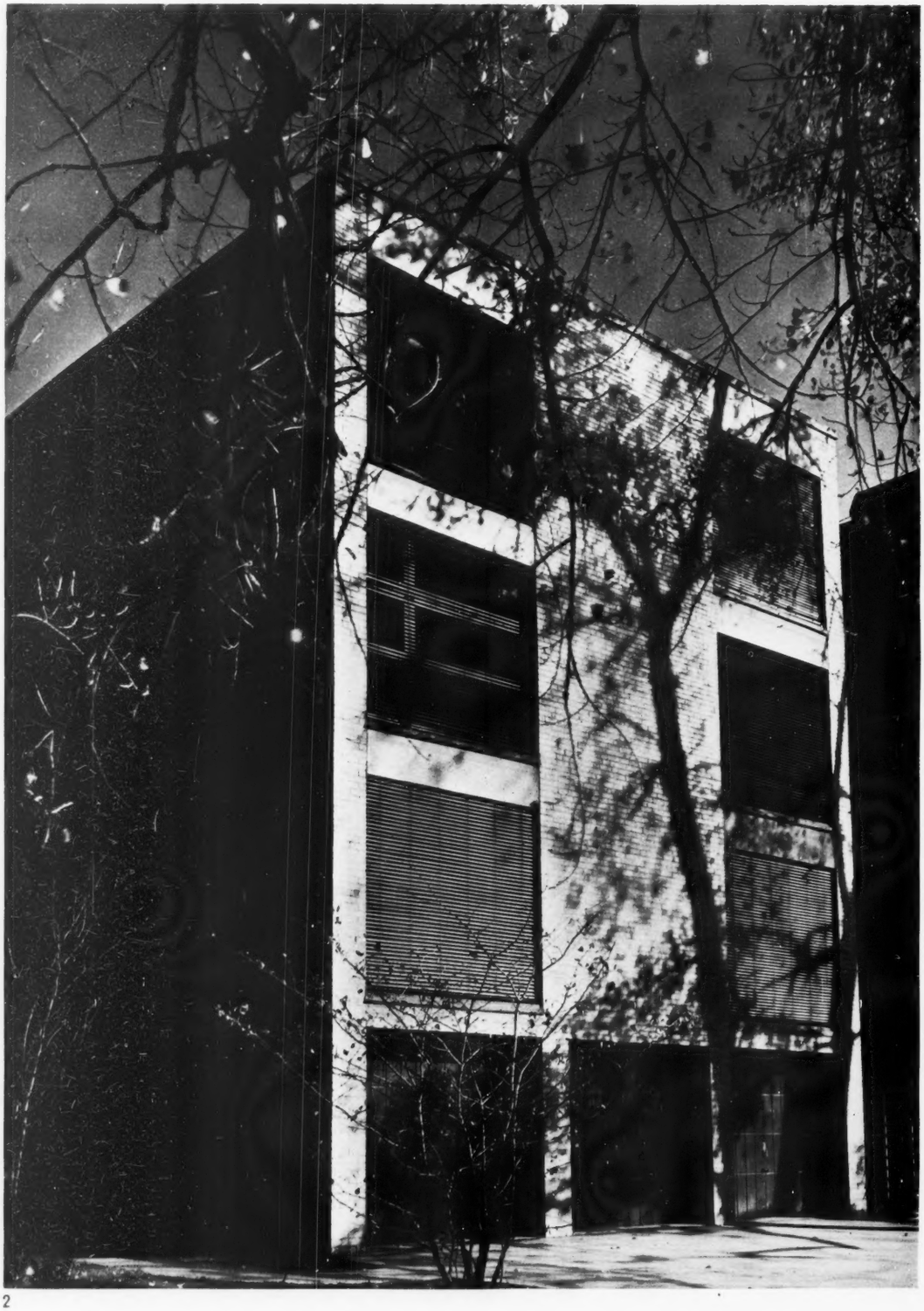
FLATS

GEORGE F. KECK

SITE Chicago, U.S.A.

PLANNING As at present constructed this block of flats contains only two very large and one small flats, occupying the three upper storeys, the ground floor being given to garages, a laundry, a workshop and a recreation room. But it has been planned so that without structural alteration the first and second floor can each be altered to make two small flats, one either side of the staircase block, and another flat provided in the rear of the ground floor, making six flats in all. Each of the two halves of the large flats already contains a bathroom, and the centrally placed staircase block would provide complete acoustic insulation between the two flats. At present it provides insulation between the living-room and

1, looking up the front elevation, showing the living-room windows to the flats screened by their external Venetian blinds. Above each window is the wood fascia of the pocket into which the blinds disappear, crowned in each case by a copper cill. This and other external woodwork is painted black. The facing bricks are orange-red.



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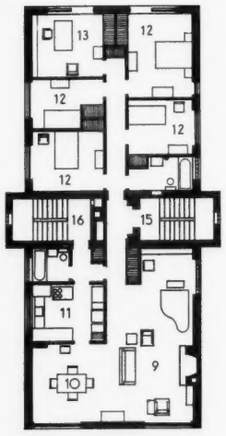
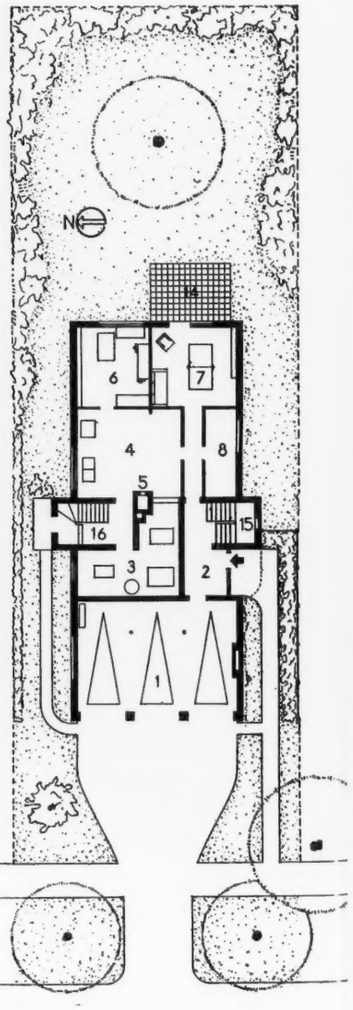


FIRST FLOOR



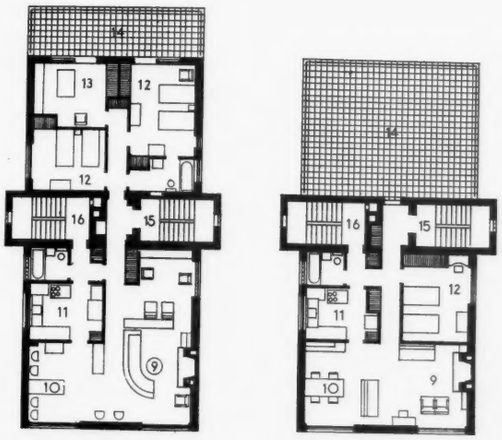
GROUND FLOOR

bedroom portions. At the rear the building is stepped back so that each flat has a terrace balcony on the roof of the one below.

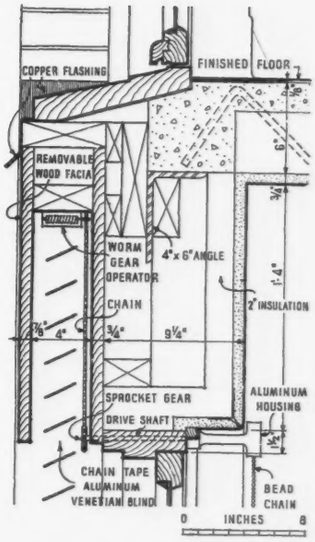
CONSTRUCTION AND MATERIALS The building has load-bearing brick walls and hollow-block concrete floors. The roof is of the same hollow-block construction, covered with a light concrete screeding and finally with tar and gravel. The facing bricks are orange-red in colour and all exterior woodwork is painted black. The main staircase is of steel, with non-slip cement treads and metal tube railings. All floors are covered in waxed black asphalt tiles. Flashings are of copper. The rail round the first and second floor terraces is aluminium.

KEY TO PLANS

1. Garage.
2. Main entrance.
3. Heating chamber.
4. Laundry.
5. Incinerator.
6. Workshop.
7. Recreation room.
8. Storage.
9. Living-room.
10. Dining space.
11. Kitchen.
12. Bedroom.
13. Study.
14. Terrace.
15. Entrance staircase.
16. Service staircase.

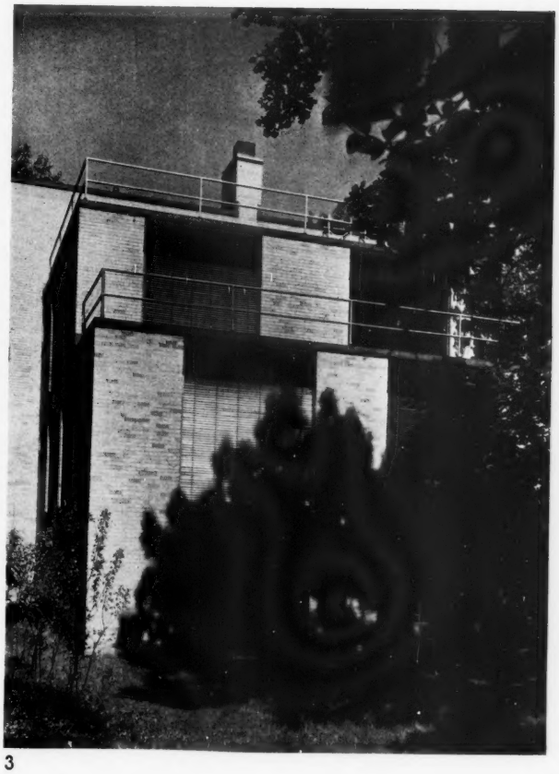


SECOND FLOOR THIRD FLOOR



SECTION THROUGH TYPICAL WINDOW HEAD, SHOWING BOX FOR EXTERNAL VENETIAN BLIND.

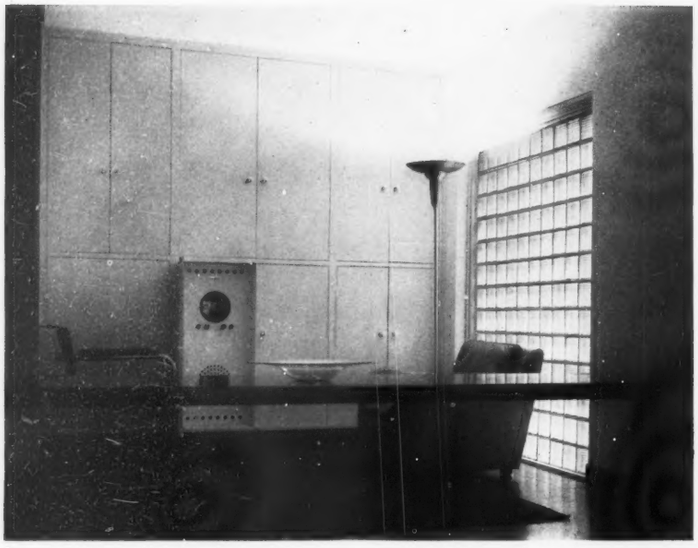
(By Courtesy of "The Architectural Record")



3

4

2 (facing page), the street elevation, showing the black painted garage doors on the ground floor and the large living-room windows on each floor above, with their external Venetian blinds of aluminium. The arrangement of the bottom-hung hopper windows, subdividing the opening into three equal sections vertically and two unequal sections horizontally, can be seen behind the blind on the second floor. The entrance to the flats is at the side, approached by a path screened from the adjacent building by the trellis seen on the extreme right of the photograph. 3, the rear or garden elevation, with the same window treatment but with each storey stepped back to provide a series of roof terraces. 4, in the dining portion of the third floor flat : a detail showing the standard window construction. See also the diagram above.



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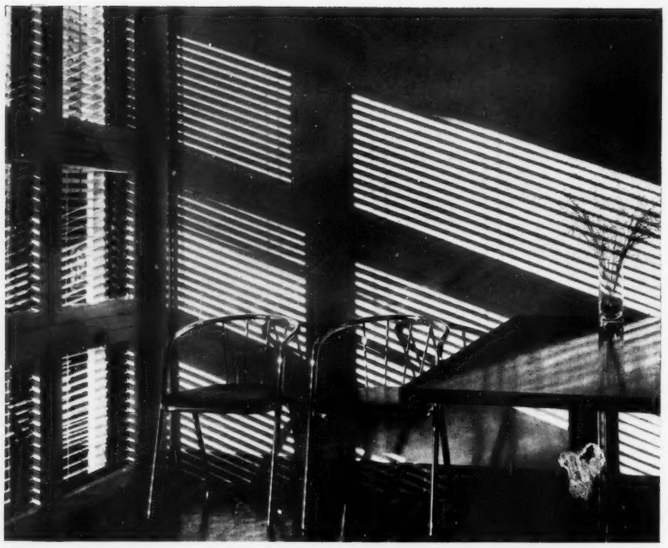
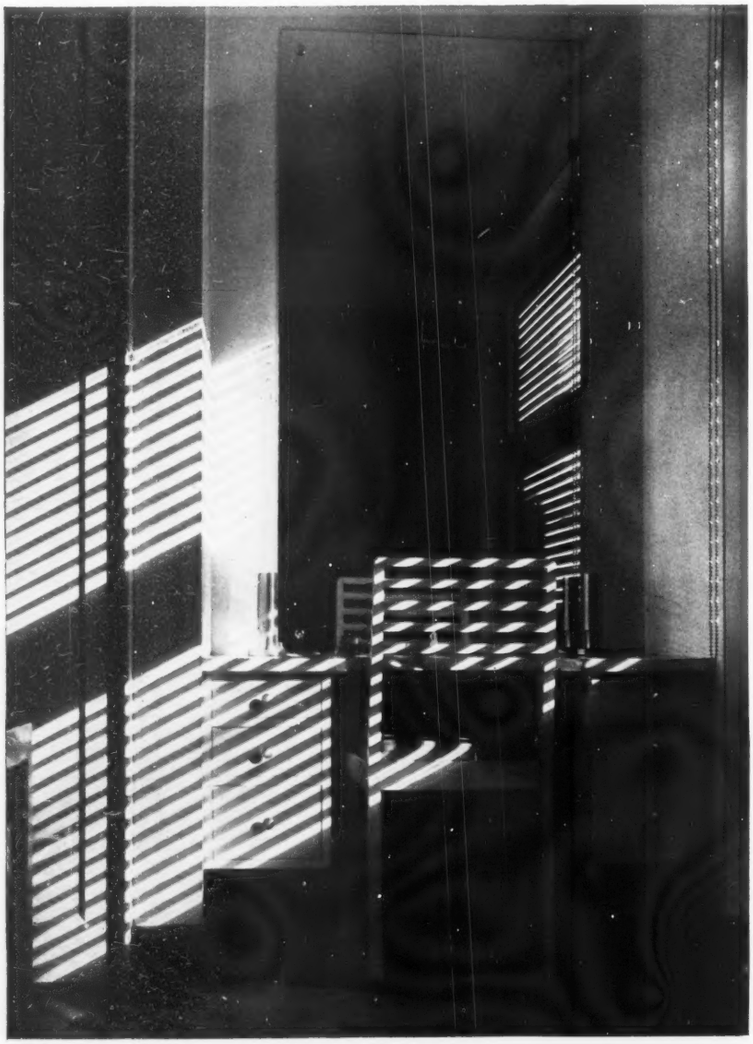


6

5, the living-room of the second-floor flat. The whole of the far wall, backing on to the staircase, consists of a built-in furniture unit consisting of cupboards, desk, bookcases and a radio-gramophone. On the right is the glass-brick window which occurs in each upper floor flat over the ground floor entrance. 6, the dining-room in the second-floor flat, again showing the standard front-elevation window with its Venetian blind behind. 7, a dressing-table unit in the bedroom of the small third-floor flat. It is built into a recess formed by the standard wardrobe fitment that occurs in each bedroom. A mirror hangs on the back wall of the recess. All the photographs illustrating this building are by William Keck.

F L A T S

GEORGE F. KECK



7

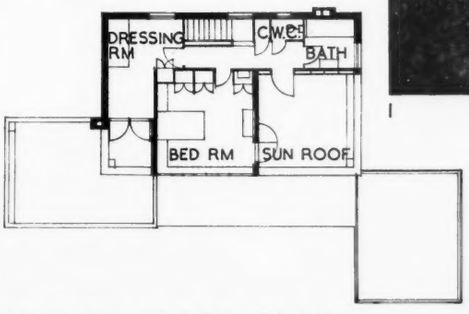
EQUIPMENT The most interesting detail in the building is the type of window used. On both the front and back elevation a transom-type wood sash is used, hinged at the bottom and swinging in. Outside each window is an aluminium Venetian blind, rolling up into a pocket incorporated in the window-head and worked by operating gear inside the room (see diagram on page 177). The windows on the side elevation and those to all staircases are built up of glass bricks. The flats are heated by individual gas furnaces which are situated on the ground floor between the garage and the staircase hall.

HOUSE

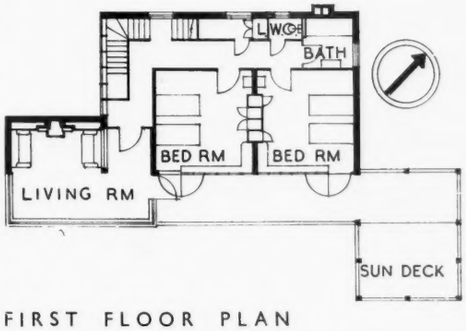
BRIAN O'RORKE

1

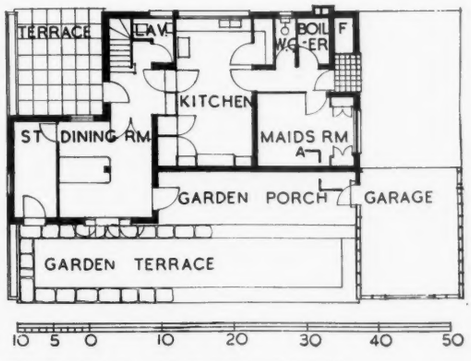
1, from the south. The garage with its sun-deck roof is on the right. 2, from the south-east. The weather-boarded walls are painted white, the ground-floor brick walls colour-washed pink and the interior of the verandah colour-washed pale blue. The window-frames are dark blue.



SECOND FLOOR PLAN



FIRST FLOOR PLAN



GROUND FLOOR PLAN

2

SITE At Kingsgate, Kent. The house was designed primarily for week-ends and summer months. The site has a view to the sea and overlooks a golf course, which is separated from the garden by a high hedge and small trees.

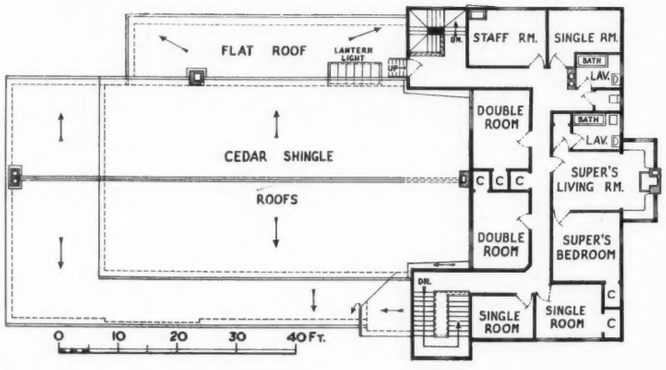
PLANNING The main rooms have been placed on the first floor to take advantage of the sea view. The owner's bedroom is on the second floor, with a dressing-room, bathroom and large sleeping verandah attached.

CONSTRUCTION AND MATERIALS The ground floor has 11 in. cavity walls in lime bricks, colour-washed pink on the outside. The upper storeys have 9 in. brick walls covered with weather-boarding. The garage has 4½ in. brick walls with 9 in. piers and a fireproof ceiling of asbestos-cement. The roof terraces are paved and the main roofs covered with asphalt with zinc dressings. Internal walls are either brick or timber studding. Steel joists are used to give the wide span to the windows. Rain-water and other pipes are carried down in chases between the brick wall and the weather-boarding, sections of the latter being made removable for access. Ground floors are solid, with wood-block or linoleum finish.

COST Approximately £3,000, including a quantity of built-in equipment and shelving.

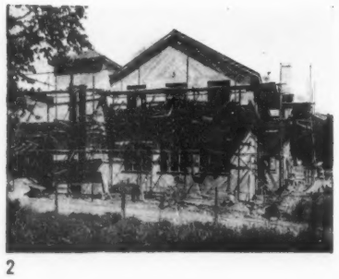
Y.M.C.A. RECREATION HUT

1



FIRST FLOOR PLAN

1, the main front of the building showing the two-storey block at the end. The principal entrance is beside the tall stair-case block. The roof of the concert hall runs out of the left side of the picture. The roof and the upper part of the walls are faced with cedar shingles and the lower part of the walls with Western Red cedar boarding. This is fixed to diagonal boarding which serves as bracing to the timber framework. 2, a progress photograph of the same portion of the building, taken on completion of this diagonal boarding.



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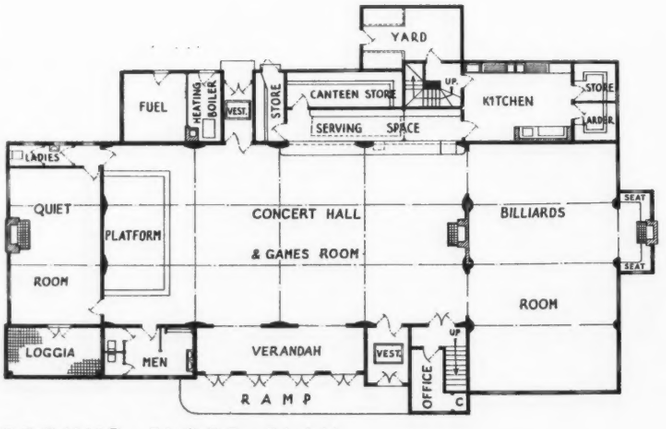


GROUND FLOOR PLAN

SITE Attached to a hospital in the south of England. The building, which is constructed entirely of Empire timber, is a gift from the timber trade to the Y.M.C.A.

PLANNING The major portion of the building is only one storey high. The ground floor consists of three sections, planned *en suite*, a billiards room, a concert hall and a quiet room (together with service accommodation). Above the billiards room is an upper storey, containing staff accommodation in the form of a self-contained flat for the supervisor and single and double bedrooms for the others. The principal rooms have been planned for easy supervision and to give flexibility in use. The billiards room, for example, can be used as an extension of the concert hall on crowded occasions, and the quiet room can be used as a green room for the concert hall stage. A mess room for the staff on the first floor is served direct from the kitchen by lift.

CONSTRUCTION This is entirely of timber. The framework has no diagonal bracing, as the necessary stiffness is given by the diagonal boarding nailed to the wall studding (this is shown in the progress photograph, 2). On top of this boarding is waterproof building paper, and on top of that cedar shingles for the upper portion and Western Red cedar boarding for the lower portion. The carcass is of Douglas fir with window frames and doors of hardwood. The concert hall roof is supported on three trusses, each having double tie-beams and principal rafters consisting of two 6 in. by 2 in. timbers. These are spaced 3 ins. apart, and the ends of the struts and ties are fixed between them. Purlins are supported on cleats fixed to the struts, and the principal rafters are kept flush with the top surfaces of the common rafters, economising the number of the latter. The roof is covered with cedar shingles. The ends of the trusses rest on 9 in. by 3 in. posts. Ceiling joists are carried on beams supported on the tie-beams of the trusses and are finished with wall-board. The second storey is carried on built-up timber girders. The floors of the concert hall and kitchen are of Burma teak blocks laid in mastic on the ground-floor concrete. The billiards room has a pyinkado block floor and the quiet room gurjun blocks (both woods coming from Burma). The canteen and all the first floor rooms have hemlock strip flooring.

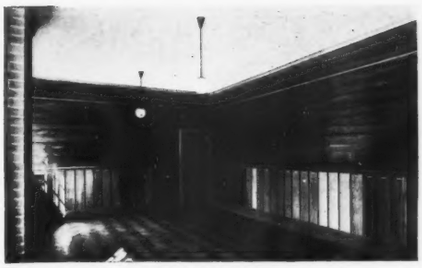
INTERNAL FINISHES The quiet room has been designed as an

KENNETH J. LINDY

exhibition of timbers. It has a dado displaying a hundred varieties, each in the form of a vertical plank bearing its name. The planks are graded so that the dark ones are in the corners and the light ones in the centre of each wall. The walls above the dado are lined with plywood with an Indian silver greywood veneer. The concert hall uses fifteen different woods, in the form of a dado with horizontal bands graded from dark at the skirting to light, and pilasters with vertical ribs graded from light at the centre to dark. The billiards room has a vertically-striped dado and casing to the ceiling girders, the wall in between being finished in plywood veneered with bleached gaboon mahogany. The kitchen fittings and canteen counter are of Burma teak.

3

4



5

3, the concert hall under construction, showing the compound timber roof-trusses resting on timber posts, the wall framework with the diagonal boarding in position and the ceiling joists supported from beams fixed to the underside of the roof tie-beams. 4, the completed concert hall, with various woods, graded in tone, forming a horizontally-striped dado and vertically-striped pilasters. Above the platform is a map of the world, painted by the architect, showing the place of origin of each timber used in the building. 5, the quiet room, photographed before furnishing to show the panelled walls employing a hundred different timbers.

POLICE BUILDINGS

VINE AND VINE

SITE Bishop's Stortford, Hertfordshire. The buildings, which were the subject of a limited competition held in 1936, consist of a police-station, police-court and matrimonial and juvenile courts. The scheme also includes a number of constables' cottages and a garage. The site was L-shaped, with the longest leg running north to south. The plans had to conform to a new building line to allow for future street widening.

PLANNING The police-station itself occupies the ground floor of the main block, with the police-court, the matrimonial and juvenile courts, the magistrates' and officers' rooms and the public waiting rooms on the first floor. This block is placed on the main arm of the site with a frontage to the High Street, giving easy public access. On the smaller arm of the site are the

1, from the High Street. 2, the main entrance front. The walls are faced with hand-made sand-faced bricks. The door surround and other dressings are of Portland stone.

2

3

4

5

garage and cottages. The police-station entrance is at the end of the main block. The entrance hall leads to the charge room and cells along the south and west sides and to the offices and parade-room along the east and north sides. The cell unit has direct communication with the dock in the police-court on the first floor. The main entrance to the courts is in the High Street, each court having a separate approach stair.

CONSTRUCTION AND FINISHES The building has weight-bearing brick walls with a minimum thickness of 13½ ins. They are in lime mortar, and the facing bricks are hand-made sand-faced bricks with red dressings to the first floor windows. Other dressings are Portland stone. Floors and roofs are reinforced concrete. The floor-finish of the police-court is cork; that of the matrimonial and juvenile court, all the offices, the corridors and parade-room is oak. The court ante-room landings and stairs have terrazzo floors with bronze insets. All walls are finished in washable distemper except the police-court and court ante-room, which have a special stippled sprayed paint. The police-court fittings are in oak with an Australian walnut banding.

3, looking from the main corridor at first floor level through the glazed doors that lead to the staircase landing by which the courts are approached. 4, looking along the length of the same corridor, showing the inlaid terrazzo floor. 5, the entrance to the police-court. 6, the interior of the court.

6

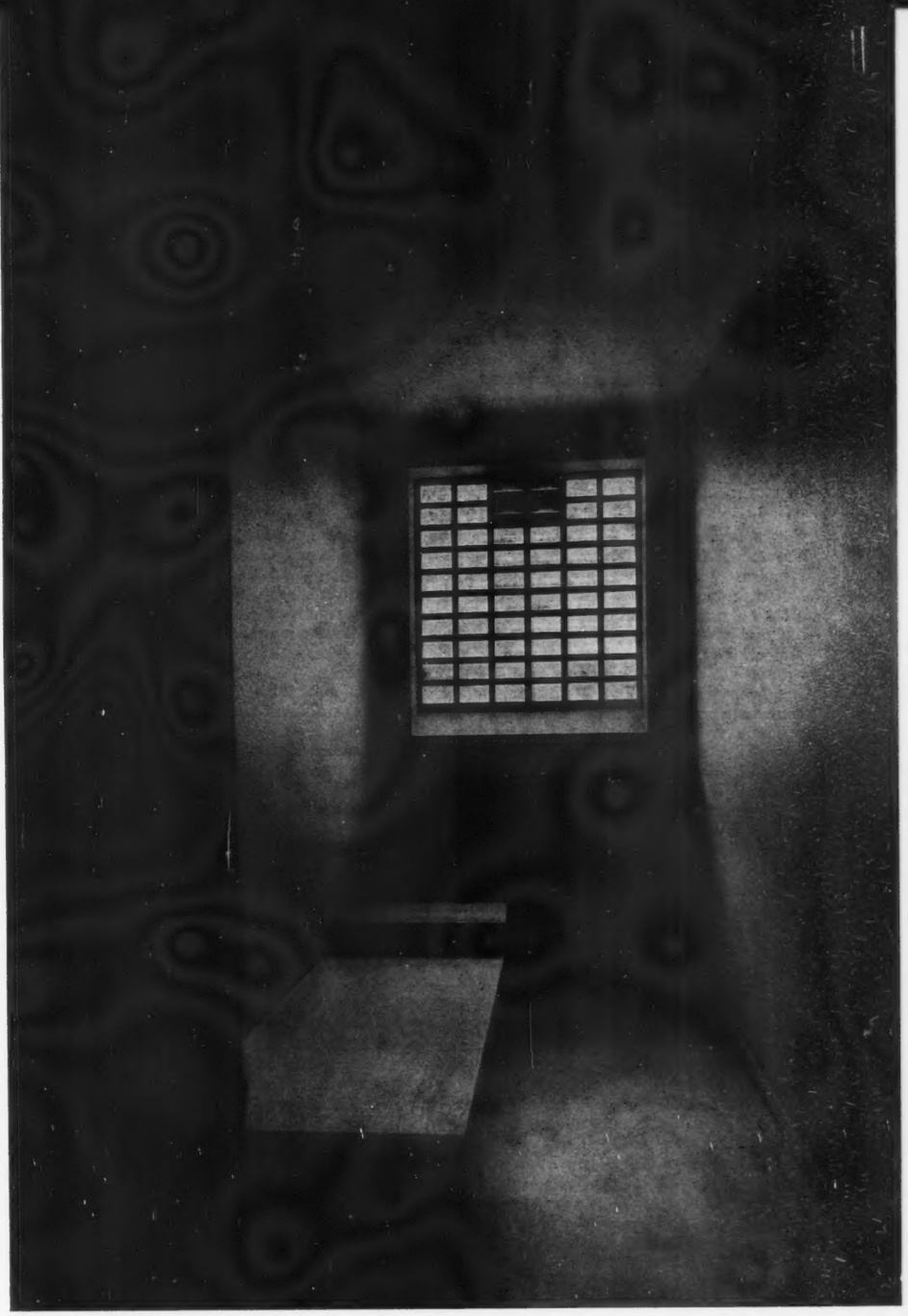
POLICE BUILDINGS

VINE AND VINE

These monthly articles are frankly about the æsthetic aspect of architectural design. They are written in the belief that we can now take the practical basis of modern architecture for granted. They claim, that is to say, that we have got beyond the stage when we were so thankful for sheer reasonableness and efficiency that these were sufficient recommendation in themselves, and that there is room now, in criticism as in actual design, for study of the æsthetic basis that the art of architecture also postulates.

C R I T I C I S M

By James MacQuedy



Interior design reduced to its simplest terms : one of the cells in a new Police Station at Bishop's Stortford (Vine and Vine, architects), used by the author of this article to illustrate his observations on the term "functionalism."

We have all heard that modern interiors look like operating theatres. This phrase has become part of the stock-in-trade of those people who have it firmly in their heads that modern architects are "functionalists," and rely on efficiency to produce beauty of its own accord; although the philosophical basis of modern architecture, in which this odd concept has no place whatever, has been reiterated quite as often as the error that makes a disclaimer necessary. For the people I am talking about have a perverse way of repeating their theory about what modern architects believe, even in the face of the fact that the architects themselves have never professed such beliefs and in the face of the evidence presented by modern buildings.

If we must generalize, the reverse is true : the modern architects are those whose designs are the product of an immediate visual experience, while the so-called traditional architects see simple æsthetic problems through an opaque veil of literary associations, conventional good form and various preconceptions of what architecture ought to look like. It is the moderns, therefore, who have most chance of becoming artists as their mastery of technique becomes more sure; for they have only to forge ahead, while the others must first divest themselves of all these intellectual encumbrances—in fact must become moderns in their turn.

But I did not intend this month to go over this tiresome story of misinterpretation again. "Modern" versus "traditional" is in any case not a real issue. It shows a misunderstanding of what "modern" means to imagine ourselves staging a new Battle of the Styles. Before long, I hope, we shall be able to discard the term "modern" altogether. What I had in mind was to try and see what we really do mean by the functional element in architectural design, assuming that we are by this date sufficiently adult to be able to do so without letting a provocative word go to our heads. Let us therefore ignore the irrelevant issues raised by people who enjoy shying at a non-existent Aunt Sally, and also the equally irrelevant overstressing of functionalism in the past for propaganda purposes by the prophets of modernism themselves, a thing that has led to much of the present misunderstanding. It is clear enough, for example, to anyone who has studied his books and his buildings, that Le Corbusier's provocative and much-quoted remark about a house being a *machine à habiter* was a piece of clever journalism that had exactly the iconoclastic effect it was meant to have. It was intended to *épater le bourgeois*, not to state an architectural philosophy.

I am moved to say something about functionalism by having come across an example that illustrates the points I want to make particularly well. It is reproduced on this page : a view of the interior of one of the cells in a new police-station which is illustrated elsewhere in this issue. No one will deny the charm of this strictly architectural interior, which is, I claim, a good example of the functional aspect of design being stressed in a positive instead of a restrictive way. Obviously the functional element in architecture, in the literal sense, is the necessity that the plan should work efficiently and the structure be both stable and economical; but taking these for granted—and without them a building can hardly claim to be architecture at all—we still find that, in a greater or less degree, its æsthetic character, as well as its external form, springs from its structural character. This is indeed a commonplace of architectural criticism. When these two are least clearly related we speak of design being mere façadism. Modern architecture, on the other hand, relates them as closely as possible, and in this sense it is admitted that modern architecture does place a renewed emphasis on function. But the point is that such an emphasis is not, as is contended, a substitution of mechanical rule for æsthetic selection; it is not even a temporary self-denial which architects have imposed on themselves as a way of bringing their art back to its base principles. For it is a mistake to dismiss this renewed emphasis on function as though it were a course of curative treatment. Rather is it based on the realization—the same realization that the first apostles of the Gothic Revival had, though their vision was unfortunately befogged by various moral and antiquarian prejudices—that the most intense architectural experiences are structural ones and therefore that the biggest opportunities of creating aesthetic significance out of the raw material of building technique lie in exploiting rather than concealing the character latent in functional form and structure. The weakness of rule-of-thumb or "period" design is not simply that it is false—a purely moral objection—but that it constitutes an end in itself. It has said, in making its all too obvious statement, everything it has to say, while the kind of design that blossoms out of function has an authenticity or vitality quite independent of the taste with which it is carried out. The former is static while the latter is organic, and the real triumph of the modern architect, as well as his cultural justification, lies in the fact that he has re-established the principle that design is an inseparable part of the process of planning and construction : that at no stage can pictorial effect be looked at independently of technique.

Looking again at the interior illustrated above, one is struck by its very clear-cut character. Though as an architectural problem it is of the most elementary possible kind, it makes a functional statement with such conviction and intensity that the result has far greater authenticity than a similar interior subjected to any rule-of-thumb architectural "treatment." In this case it was probably considered that the nature of the subject did not demand anything more. The bones of architecture were therefore left exposed, but they were allowed to articulate themselves into an organized pattern. The rest of the building, though not without its points, shows neither the same courage nor conviction, but

A Note on Stepping Stones

In a recent note on clapper bridges* reference was made to stepping stones. Amateurs of stepping stones are, I fear, few and far between. Clapper bridges, if good, are ancient monuments, but stepping stones are held to be nothing. In truth, however, they are the fathers of all stone bridges—possibly of all bridges whatsoever, though probably fallen tree-trunks would claim paternity of wooden bridges. On northern moorlands and in Scotland they survive in many places but they are now rare in southern England and even in South Wales. For motorists are soft folk, unwilling to splash through fords, as did their horse-driving grandparents, so County Council bridges are multiplied and stepping stones are lost.

Two lines or sequences (should one say a "line," "sequence" or "set" of stepping stones?) in the Gower Peninsula are of interest. The first, 1, illustrates well, when Park Mill Pill is low, how stepping stones grew into clapper bridges. There are no clappers, but the chief stepping stones are protected with smaller stones which perform the function of cut-waters. I have as yet found no comparable example, though I found a short sequence of stones in southern Scotland, 2, that had been protected by the mooring of a log immediately above. The other Gower stones, beside a bye-road, 3, have an iron handrail. Though an iron or wooden handrail is a very common addition to old stone bridges, I have nowhere else seen one with stepping stones.

Some excuse might be found for rails with two modern lines of stepping "stones." One consists of concrete blocks, and may be seen north of Dorking, under Boxhill, at a point where the Pilgrim's Way crosses the River Mole, 4. The other, 5, is perhaps a unique example of an old tradition perpetuated in new materials. It consists of metal drums or canisters filled with concrete, and takes the right-of-way to Spectacle E's Fall near Strathaven in Lanarkshire. The two last-mentioned lines are on the site of more ancient stones; it would be interesting to hear whether there is any place where new lines of stepping stones have been established within recent years.

Among stepping stones which are known beyond their own locality are those across the River Rothay near Ambleside; at Bolton Abbey, Yorkshire (very useful they were, a year or two ago, when the bridge failed); across the Hebden Water at Hardcastle Crags (a very fine sequence); in Dovedale; and across the Ewenny River in the shadow of Ogmore Castle ruins, Glamorganshire, 6. These last, which have sometimes been described as "Norman" and contemporaneous with the castle, were at one time threatened with supersession, but they were still standing a year or two ago.

Four years ago a note on stepping stones in the daily press evoked references to stones across the Tees below High Force, at Seathwaite in the Duddon Valley, and across the Nent at Nenthead, the highest village in England, situated near the meeting point of Cumberland, Northumberland and Durham. But no one said whether Bettws-y-Coed, Ilkley, Jesmond Dene and Hathersage still have stepping stones. It is, of course, obvious that, even when they are not deliberately removed, stepping stones will disappear in time if superseded by a bridge. First a single stone goes, and then another, and there are no replacements; the process may be observed at Newport, Pembrokeshire, where a line across the Nevern which must have been as long as any in Britain now has wide gaps.

Below the Llandovery-Brecon road, at a spot where a stone marks two miles from Brecon, is an attractive if vague pedestrian crossing of the Usk. But perhaps the loveliest of all surviving sequences is to be found half a mile from Chagford in Devon, 7: a cherry tree adorns the approach from a farm yard. I think there are stepping stones still at South Pool in Devon, and possibly elsewhere on Dartmoor. Certainly there is a line of stones by which the stream running out at Perranporth Beach in Cornwall may be crossed at low tide, 8. But I, who have "collected" stepping stones for six years, should be sorry to have to name twelve sets in England south of Oxford. The statement "stepping stones" on ordnance maps is usually out of date and untrue: the motorists have squawked too loudly—and to ill effect. Yet it is pleasant to be able to record the survival of a line of nine stepping stones quite close to London, across the Pinn, beside a water-splash south of Swakeleys. It would be interesting to know whether any others survive in the Home Counties. I do not know how widely stepping stones may occur (if at all) on the Continent of Europe, but an American correspondent writes that he has himself seen none in the U.S.A. and research has failed to reveal the existence of any. In this country, though we want no fetishes and generally get more than our fair share of antiquarian sentimentality, there is yet, surely, a case for the survival of stepping stones. The Society for the Preservation of Rural England should be specially interested, and so should walkers' associations, and fly-fishermen.

J. D. U. WARD

* In THE ARCHITECTURAL REVIEW for May, 1940.

1

2

3

4

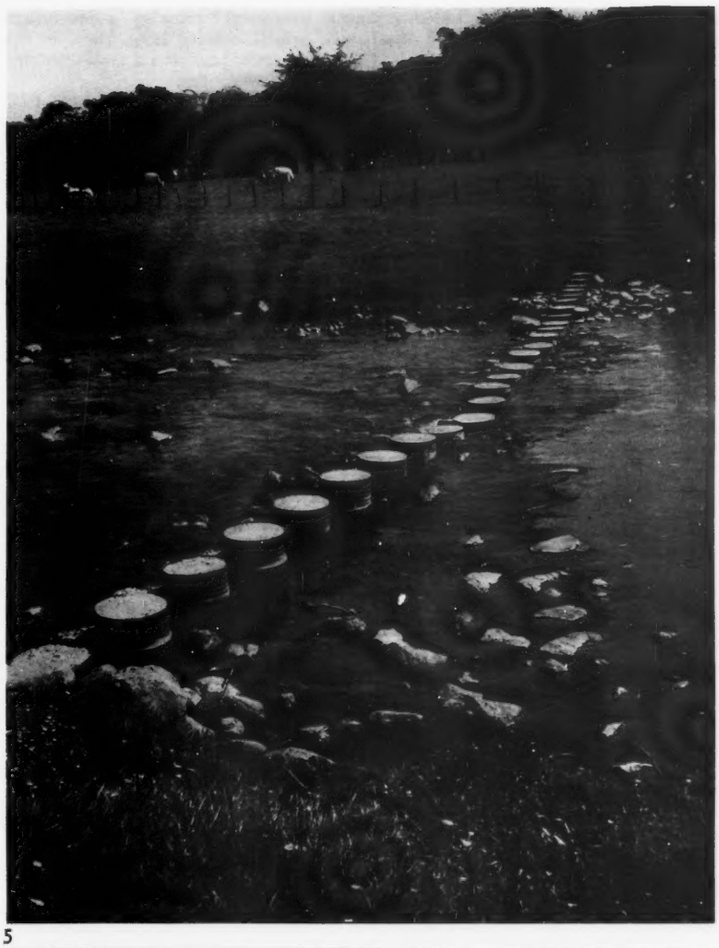
1, *stepping stones over Park Mill Pill in the Gower Peninsula, showing the chief stones protected with smaller stones, which serve as a cut-water.* 2, *stepping stones in southern Scotland, protected against the force of the stream by a moored log.* 3, *stones with handrail, in the Gower Peninsula.* 4 *and* 5, *modern stepping "stones": hexagonal concrete blocks beneath Boxhill, and concrete-filled canisters in Lanarkshire.* 6, *beside Ogmore Castle ruins, Glamorganshire.* 7, *near Chagford, Devon.* 8, *stones by which a stream, running out at Perranporth, Cornwall, can be crossed at low tide.*

[Continued from page 183]

whether the charm of this particular interior is an accident or not is irrelevant to purpose. Call it intuitive art or even call it a trick of the camera, the fact remains that here in a small way is the geometry of structure revealed as capable of acquiring æsthetic significance by virtue, as it were, of its own reticence, its very bareness of statement being far more telling than any formal rearrangement of its various elements or any "styling" in conformity with artistic conventions.

There is no need to labour the point that the quality of this interior is not functional in the literal sense of happening automatically. One can imagine the same elements arranged with less skill on the designer's part in an entirely fortuitous and meaningless way. Its quality is apparent in the crisp relationship of geometrical planes, in the satisfying precision of all the shapes and in the way the different materials are each given an appropriate weight of structure, apart from the subtle variations of texture and tone.

It will of course be said that such a utilitarian effect as that which springs out of a prison cell is not sufficient for other kinds of architecture; that the prison cell is no better as a precedent than the operating theatre. But the point is that the needful richness is not the outcome of a different method. It is a matter only of degree. If, as in this case, an authentic architectural quality can spring out of the bare elements of a primitive interior, how much more can richness and vitality be expected to grow when imagination is stimulated by an infinitely wider range of structure, form and material. How much more promising a starting point is such a demonstration of the abstract values of architecture stripped of its pretences than the starting point commonly claimed as more cultured by the rule-of-thumb designers, which only consists of the pretences themselves.



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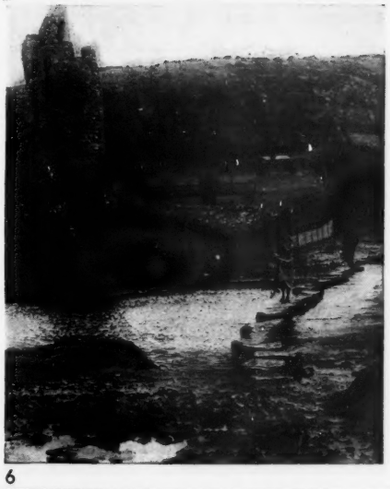

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7

8

BOOKS

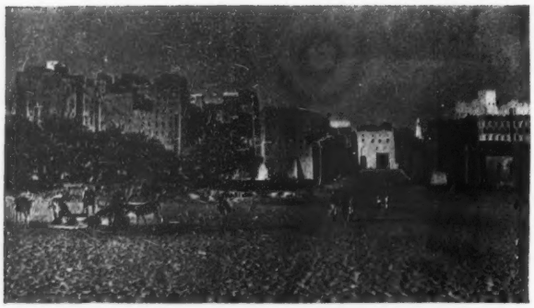
Out in the Mid-day Sun

A WINTER IN ARABIA. By Freya Stark. London: John Murray. Price, 16s.

PSYCHOLOGISTS have recently discovered that the English propensity for producing intrepid travellers who, in one generation after another, set out on difficult journeys and face hardships and dangers with no incentive but a personal urge, is closely linked with the English social conventions and the unnaturally inhibited life they produce. The fact that in the nineteenth century, when caste and convention were at their most oppressive, the urge to escape from all kinds of frustration most constantly found its outlet in travel, can be explained by a combination of causes: the romantic Victorian faith in a better world than civilization at home was evidently producing inspired a search for Utopia abroad; the solitariness of mind which was a characteristic attribute of greatness at this time—providing a link, incidentally, with the great eccentrics of the eighteenth century—found an appropriate setting in the exploration of unknown lands with no company but that of natives as intellectually remote as children or birds; and—a more practical and obvious reason—the globe was still spotted with dark areas which invited the explorer's enterprise and offered him the satisfaction of adding to geographical knowledge.

The nineteenth century thus bred a peculiar kind of traveller, one who travelled for its own sake and therefore differed fundamentally from the explorers of previous centuries, however similar their ultimate service to humanity may have been. For the latter were impelled primarily by something more than a personal urge—by something more, even, than geographical curiosity: by the search for markets and raw materials, for instance, and the rivalries of Empire—to say nothing of the no less real rivalries of creed in the expanding mission fields. Inevitably, however, the territory available for solitary travel rapidly diminished. By the end of the century the Dark Continent had been opened up, and the South Seas had been brought within the orbit of the luxury cruise. Polar exploration remained, but this needed too complicated organization to be within the scope of the enterprising amateur; moreover, even in this field the rewarding pioneer work was soon to be completed by men like Scott, Shackleton, Peary and Amundsen, leaving polar exploration to become a less romantic, more routine-bound affair, involving chiefly the patient collecting and sifting of scientific evidence.

The era of the great amateur traveller was thus drawing to a close, but there was one quarter of the globe that survived, not only after the end of the nineteenth century but well into the twentieth, both as an unknown land challenging the intrepidity of the explorer and as territory that still offered sanctuary to the itinerant hermit impelled by the personal urgency above referred to. Oddly enough, it was not in some distant corner of the globe that unbeaten paths survived so long; instead it was close by the sophisticated centres of Europe, in a region that had been itself a breeding-ground of more ancient civilizations. It was in the Arabian peninsula, and in the history of Arabian travel we find a remarkable sequence of great personalities, all setting out from this country with, in common, a simple scientific curiosity admixed with a childlike vehemence of spirit and intellectual aloofness, which latter, at the same time, found a perverse satisfaction in submerging itself in the timeless ritual of nomadic life. The moods of the Bedouin seem peculiarly to have suited the spiritual needs of travellers from England; not that they idealized him or saw in him, as travellers conscious of their own country's shortcomings might have done, the personification of the less sophisticated virtues. To romanticize the desert sheikh is the later error of the novelette and the cinema film; all the Arabian travellers, on the contrary, refer in their writings to numerous defects and ficklenesses observable in the Arab



The fortress town of Shibam, the most spectacular of the mud-walled cities of the Hadhramaut. From a photograph by Freya Stark, reproduced from her book, "A Winter in Arabia," reviewed on this page.

character as well as to numerous virtues. The appeal of Arabia was not one of glamour. It was a profounder one than that; partly, I think, contained in the revelation that the Arab's child-like unwillingness to take any thought for the morrow is not visited by immediate retribution, but also in the reassuring timelessness and immutability of custom, in the topography of the desert, whose barren nature evokes a sense of achievement in the very continuance of living, unknown in more fertile climates, and also perhaps in the Biblical atmosphere in which the traveller found daily life enveloped, presenting a physical embodiment of what, since childhood, had formed so large a part of the furnishing of his imagination. Added to these is the overshadowing presence of the past, which, though apparently not felt by the Arab for the very reason suggested above, that the past is not separated by anything tangible from the present, stimulated the antiquarian curiosity which was part of the make-up of most sophisticated explorers at this time.

The greatest of all these Arabian travellers was Charles Doughty, who was preceded by Palgrave and Burton and followed by Captain Leachman, Gertrude Bell, Cheesman, Philby and Bertram Thomas, to name only the most notable.* To that list one has no hesitation in adding the name of the author of this book, Freya Stark. One must leave it to the geographer to determine the relative practical value of all their travels. One can only know them oneself through the written accounts that exist and particularly through their own autobiographical writings; for it happens that, apart from the fact that the fascination of the subject would make almost anything written about it acceptable, a profound literary talent seems in every case to go with the other qualities Arabian travellers have in common—in the case of Doughty it is genius; *Arabia Deserta* is one of the great books of the English language—and the travellers I have mentioned have left behind them a series of remarkable books, constituting between them a whole province of travel literature and, incidentally, each bearing a clear impress of the author's personality.

Although Miss Stark is thus the latest of a distinguished line of travellers reaching back to the middle of the nineteenth century, she proclaims her own era clearly enough; for the serious scholarship and the immediate sympathy with the Arab mind which she has in common with her predecessors is not accompanied by that determined eccentricity that belongs to the romantic age of escape, an eccentricity most striking in Doughty's philosophical make-up and evident in his literary style, which, in spite of his own claim that his lifelong travels were only incidental to his philological mission to "continue the older tradition of Chaucer and Spenser, resisting to my power the decadence of the English language," is so strange that some people find his work hardly readable. The same eccentricity is discernible in varying degrees in Doughty's successors, in St. John Philby and Lawrence, for example, with their background of mysticism, and even on occasion in Gertrude Bell, who was, to say the least of it, unconventional in relation to the Edwardian society she was born into.

Miss Stark's most striking quality, on the other hand, is her common sense. Combined with her great sympathy with all she sees and her sensitiveness as an observer, is a matter-of-factness that enables her to describe the most outlandish events in the unemotional terms of a scene observed from the top of a 'bus. Another of her qualities, one necessary, of course, to all travellers, is pertinacity. This is demonstrated by her behaviour in face of the illness that overtook her on several occasions during the journeys she describes in her books. She did more than surmount such handicaps; she turned them to excellent account. For one feels that the very intimate knowledge and understanding she acquired of the people of Hureidha, for example, where she spent much of the time covered by the book under review, could not have been acquired except through the consciousness of common humanity engendered by her spell as an invalid amongst them.

The part of Arabia that Miss Stark has made her own is the Hadhramaut, the strip of Southern Arabia bordering the Gulf of Aden. In this she has broken new ground, for most of her predecessors' journeys took them to the lands much further north, since they approached the untravelled desert regions from Damascus or Palestine. Doughty's greatest achievement, for instance, was to penetrate to Hâyil, the capital of Nejd and stronghold of the Nejd rulers, the Ibn Rashids. Gertrude Bell also reached Hâyil. Palgrave had penetrated even more deeply into unknown Arabia as far as Riyadh in the country of the fanatical Wahabis, now the capital of Saudi Arabia, as did more recently Leachman, Philby and the unfortunate Shakespear, but until Miss Stark's arrival no traveller combining the same literary and geographical talents had paid any attention to the south-western shores of the peninsula.

If she was not the first European ever to explore the Hadhramaut (Bent and Hirsch had made several important journeys in the 'nineties and von Wissmann went there in 1931), she found it sufficiently unvisited, and its people as suspicious of the intentions of strangers as Doughty found the people of Nejd, so that her earlier book, *The Southern Gates of Arabia*, tells of real perils as well as the common misadventures of travel; and she showed herself an indubitable pioneer in determining to spend a whole winter living in an inland town of the Hadhramaut, as described in this book. She was not entirely alone, since most of the time she had for company an archaeological expedition excavating the sites of ancient cities; but her book is not much concerned with archaeology. Instead she describes, in the sympathetic manner I have already noted, the daily life of an Arab town, its ritual and social organization, and especially the people whom she came to know so well, through whose charming, infuriating or pathetic personalities we see the whole panorama of Arab life exemplified. In the second part of the book she describes a solitary journey she made southward from Hureidha to the sea, by an unexplored route on which she found vestiges of ancient traffic, that of the incense traders of many centuries ago. Again the trivial incidents of desert travel are illuminated by her acute observation and her sympathetic understanding of a people unobsessed by time, in whom purpose is constantly confused by memory.

As with her previous books, this one is embellished by Miss Stark's own photographs, which are always beyond praise technically, pictorially and as comment on the life she observes so keenly. They show better than any description the setting in which this life is lived: cliffs and ravines, the sandy waste of the desert, and stony valleys spotted with the odd egg-shaped domes of tombs, and most dramatic of all, the skyscraper mud-walled cities of the Hadhramaut, in particular Shibam. As an architectural spectacle the latter must be unique and, to those who think of the Arab as existing only in the black tents of the Bedouin or the small houses that constitute the Arab quarters of Mediterranean towns, will come as a revelation. To Miss Stark herself, coming upon them in her travels, they must have provided a really moving architectural experience.

I suppose it is natural that one should compare Miss Stark's travels with those of Gertrude Bell; for they are the two notable women explorers of Arabia—the only two if we except Lady Anne Blunt, who made but a single journey across Arabia, and the earlier figure, much earlier than Doughty even, of Lady Hester Stanhope, whose contribution to geographical knowledge was not great, though her courage and endurance were, but who is worth mentioning because she exemplifies in an extreme degree the blessed eccentricity I have referred to as characteristic of the earlier amateur travellers. In her pathetic case, indeed, eccentricity bordered on lunacy and the characteristic solitariness of mind ended as megalomania.

The comparison of Freya Stark with Gertrude Bell brings out some differences between 1900 and today; among them the typical difference between the restless amateur traveller whose goal is always somewhere round another corner and the student to whom a localized subject-matter is satisfying without the constantly renewed stimulus of exploration; also the difference between the Edwardian dilettante to whom the world is almost too full of possibilities newly opened up to emancipated woman—languages, archaeology, ethnology, art and life in general—and the more expert geographer of today. Both Miss Stark and Miss Bell, however, are notable for preserving a simple human understanding unspoilt by the extensiveness of their achievements. The latter was the most human of all blue-stockings; the former a charming commentator on many sides of life as well as a learned authority on Arabia and, incidentally, the possessor of a literary style that would alone give permanent value to her writings.

J. M. RICHARDS

* One should probably add the name of T. E. Lawrence, although his achievements as a traveller were not so considerable, because his reputation is part of the richness that recent Arabian travel possesses in the popular imagination, and because he provides another example of the strong personalities that have been led to Arabia by the kind of intellectual urgency I have described.

SHORTER NOTICES

MINERS' WELFARE, 1939: Annual Report of the Miners' Welfare Commission. Price 1s. 6d.

THE annual reports of the Miners' Welfare Commission have always constituted an inspiring record of achievement. Under the leadership of J. H. Forshaw their Architects' Department was a model of what a public architectural office ought to be. Not only have the buildings the Department produced never shown any of the "safety-first" modified Georgian predilections that we associate with other public offices, but—and this second virtue is perhaps indirectly the cause of the first—the Department itself created a most successful type of regional office organization that ensured sufficient co-operation for the whole Department to work as a team, and yet allowed sufficient individual freedom for the individual architects to have a personal and spontaneous interest in the particular jobs for which they were responsible, an interest that the organization of other public offices seldom makes possible.

In view of this it is sad to have to record that the Report under review is the last that will appear. Since its publication, as a result of the war, the Department is being closed down. Why its services are less needed in wartime is not clear; but what is even less clear is why such an admirable team of architects must be disbanded. If they are no longer needed for the welfare of miners, there are surely other nation-wide building needs that could benefit from their experience of working as a team and by their already existing regional organization. Mr. Forshaw, it is true, had already left the Miners' Welfare Commission to go to the L.C.C., where, incidentally, it is hoped that he may be given the chance of infusing some of the Miners' Welfare spirit into its architecture; but his able assistant C. G. Kemp was conducting the Department in the same spirit and with the same efficiency.

This notice must thus serve as an obituary notice of a remarkable team of architects. Tribute has already been paid to the progressive character of its organization; it only remains to say that the new buildings illustrated in this Report show that the Department's old standard was being maintained under its new leadership. As previously, the idiom employed, if not always as sensitive as it might be, is both consistent and appropriate; also, as previously, the housing and incidental buildings are on the whole less successful than the Pithead Baths. The best of the latter are those at Swanwick, Derbyshire, Lea Green and Clock Face, Lancashire, and several in Durham.

DECORATION

A lady's dressing table, designed by Frederick Gibberd, illustrating the chief storage elements: shallow drawer, arranged as a well, for combs, brushes and cosmetics; drawer on the right for jewelry; pedestal containing shallow drawers for manicure set, powder boxes, pins and similar small articles, and a deep drawer for bottles. The well or sunk tray has the sides enamelled white and the bottom lined with white opal glass. The lid is fixed with a piano hinge and closes down on the well to hide away the articles which often look untidy; the light mounted over the mirror is automatically switched on when the lid is opened. The carcase is constructed of multi-ply, veneered in American mahogany; the drawers are of polished solid mahogany, that for jewelry being lined with velvet, and the metal leg and knobs are copper plated. Dressing table storage is dealt with on the following pages in the seventh of a series of articles which stress the decorative opportunities latent in the necessities of domestic storage.

Decoration as Storage

The series of articles of which this is the seventh are an attempt to examine the possible decorative use that can be made of one particular function of the interior, namely storage. It will be realized on reflection that it is not far from the truth to say that nearly the whole of interior architecture is concerned with the problem of storage. The designless home is that in which all the owner's possessions are heaped in a litter on the floor; the well-designed home is that in which each object has its appointed place; and the well decorated home is that in which the necessity of storing innumerable pieces of property is made the opportunity for an interesting sequence of shapes and patterns. The bedroom is as much dominated by the wardrobe and chest-of-drawers as by the bed, and the modern kitchen often appears to consist of nothing but an array of cupboards from floor to ceiling and wall to wall.

In these articles, by taking each object that has to be stored in turn, it is hoped to show what decorative effect the ingenuity of architects can extract from an efficient accommodation of it. The heading of the first article was Books; of the second Kitchen Storage; of the third Clothes; of the fourth Studio and Writing Materials; of the fifth China and Glass; of the sixth Nursery Storage. This month it is the other storage unit required in the bedroom, the wardrobe for clothes being the principal one: namely, the Dressing Table for cosmetics, etc. The notes are by Frederick Gibberd.

7 DRESSING TABLES

2, in a flat at Brighton (Wells Coates, architect). The striking circular mirror centrally placed helps the dressing table to dominate this side of the bedroom. Two "secret" jewel trays slide out over the ends of the shelf between the cupboards. The latter are fitted up inside with trays, shoe-racks, etc. 3, in a London flat designed by Gordon Russell. The dressing table forms the centre piece of a complete built-in bedroom suite. On its right is a wardrobe and on its left a long shelf for shoes with tambour shutter. The woods used are weathered sycamore and walnut.

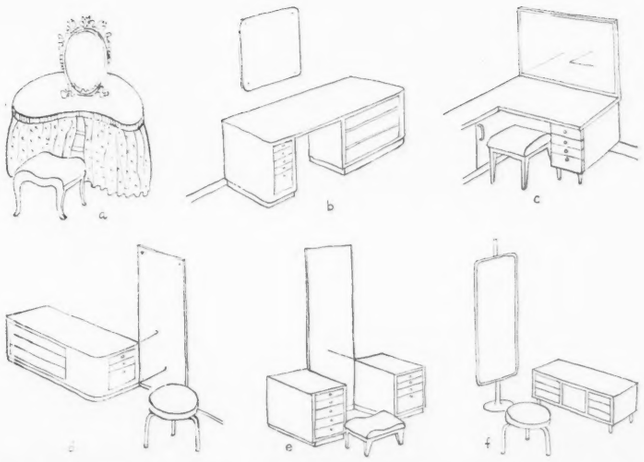
2

3

The elements of a woman's dressing table (and a woman's will be considered here, as it is a similar, but more complicated, problem than a man's) are: mirror with artificial light, flat table-top or shelf, drawer for jewelry, shallow drawer for powder boxes, combs, manicure sets, pins and similar small articles, and a deep drawer for bottles. In specially designed tables, such as the majority shown here, the idiosyncrasies of the owners will naturally have an effect on the design; for example some women like to range their brushes and combs and bottles on the top, as in 3 and 9, while others like to put everything away, as in 1.

Although dressing tables are of all shapes and sizes they can be classified under one of two groups, those in which the storage elements are ranged round a knee-hole so that one sits in the table as one does at a desk; and those in which one sits sideways on to the storage units so that there is no limitation to the table height or to the disposition of the units, providing of course that they are all within reach.

The mirror complicates the design of the dressing table as it is not easy to combine a flat vertical plane, standing against or fixed to a wall, with a horizontal one at right angles to it. Before the perfection of electric lighting this was still further complicated by relating the unit to windows so that natural lighting fell on the face of the user when sitting at the mirror. The usual solution was to place the table in front of the window with the mirror either standing on the top or fixed to the back in silhouette against the



light; the obvious limitation is that the mirror is restricted in size, owing to the difficulty of fixing, and obstructs the light source. Dressing tables of this type are still very popular, particularly the white wood variety draped with chintz, diagram *a*, above. These look very feminine when carefully displayed in the showroom of a big store—though their appearance after the wood has been thumb-marked and the fabric creased through groping between its folds is another matter.

A large area of mirror is required by most people for dressing, and as electricity can be made to provide day lighting conditions without shadow, the dressing-table may be built against a blank wall with the mirror fastened above it. Even when the table is a mobile one a mirror fixed in this manner relates the table to the wall and fixes its position in the room, diagram *b*.

When the mirror is of the same width as the table and fits tight down on it the two read together as one built-in fitting, diagram *c*. But when it is really large, as in 4, it is more inclined to appear as a glass wall against which the table is standing. This appearance is further accentuated by a corner treatment which doubles the apparent length of the wall.

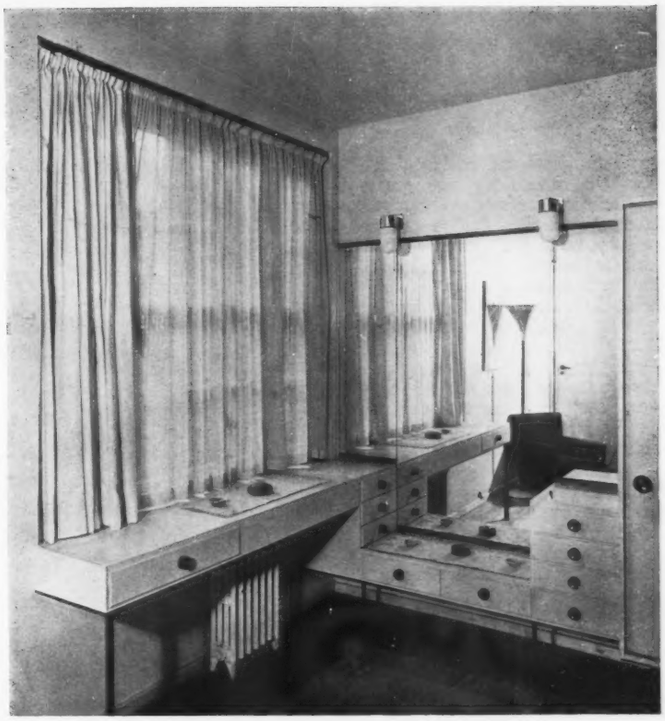
There are occasions when a full-length mirror is required in conjunction with the table. Furniture manufacturers usually fix this by clamping it between two storage units, diagram *e*. Alternatively it may be fixed to the wall at the side of the table, in which position it will be more convenient if some of the drawers are arranged to pull out at the end of the chest, diagram *d*.

Full length mirrors are occasionally designed as a free-standing unit with the storage chest and stool adjacent to it, diagram *f*. The chest is usually low in contrast to the mirror and is placed at an angle so that one sits sideways on to it and facing the mirror.

The practice, which is now almost general, of constructing all the storage accommodation of the bedroom as part of the structure rather than leaving it to be provided by the owner in the form of independent pieces, has resulted in many designers combining the dressing table with the other storage elements. In 3 the table is combined with the wardrobe and a cupboard for storing shoes. The wardrobe projects slightly in front of the table, giving the suggestion of a dressing recess, and apart from the unity of materials cohesion is given to the design through the mirror being the same height as the wardrobe and the table and cupboard tops being continuous.

In some instances the component parts of the dressing table have been broken up and re-arranged with other elements in such a way that the characteristic form of the table is quite lost. In 4 the drawers are lifted well clear of the floor on tubular metal legs, and combined with a single drawer shelf at right angles to them; the small drawers on the left are turned in to open over the table top, thereby avoiding a blind corner. Another free arrangement is shown in 5, where drawer units both for dressing and general storage are related by their similar painted finish and handles, and are linked up by wood and glass shelves.

The general finish of the dressing table depends on the desired decorative values of the room as a whole, but it is worth noting that the table top is a working surface, and when in use is apt to become covered with a fine film of powder which finds its



4

5

6

4, the corner of a dressing-room in a London flat (Serge Chermayeff, architect). The built-in furniture units have a painted finish with bronze handles and bronze tubular legs. 5, a rather similar arrangement in a bedroom in a house at Bristol (Connell, Ward and Lucas, architects). 6, a dressing-room in a house in Surrey (E. Maxwell Fry, architect), with a cupboard and shelf fitting, glass-topped, running the length of one wall.

way into joints and crevices, and is subject to marking from greasy cosmetic jars or spilt liquids. A hard plain surface which can be easily wiped over with a damp cloth such as cellulose, 9, or glass, 5 and 8, is desirable, but if a soft finish is required for its decorative value it should be covered with a sheet of plate glass, as in 4 and 7. The interiors of drawers should have a smooth, easily dusted surface, excepting those for some special purpose such as jewelry, which usually have a velvet lining.

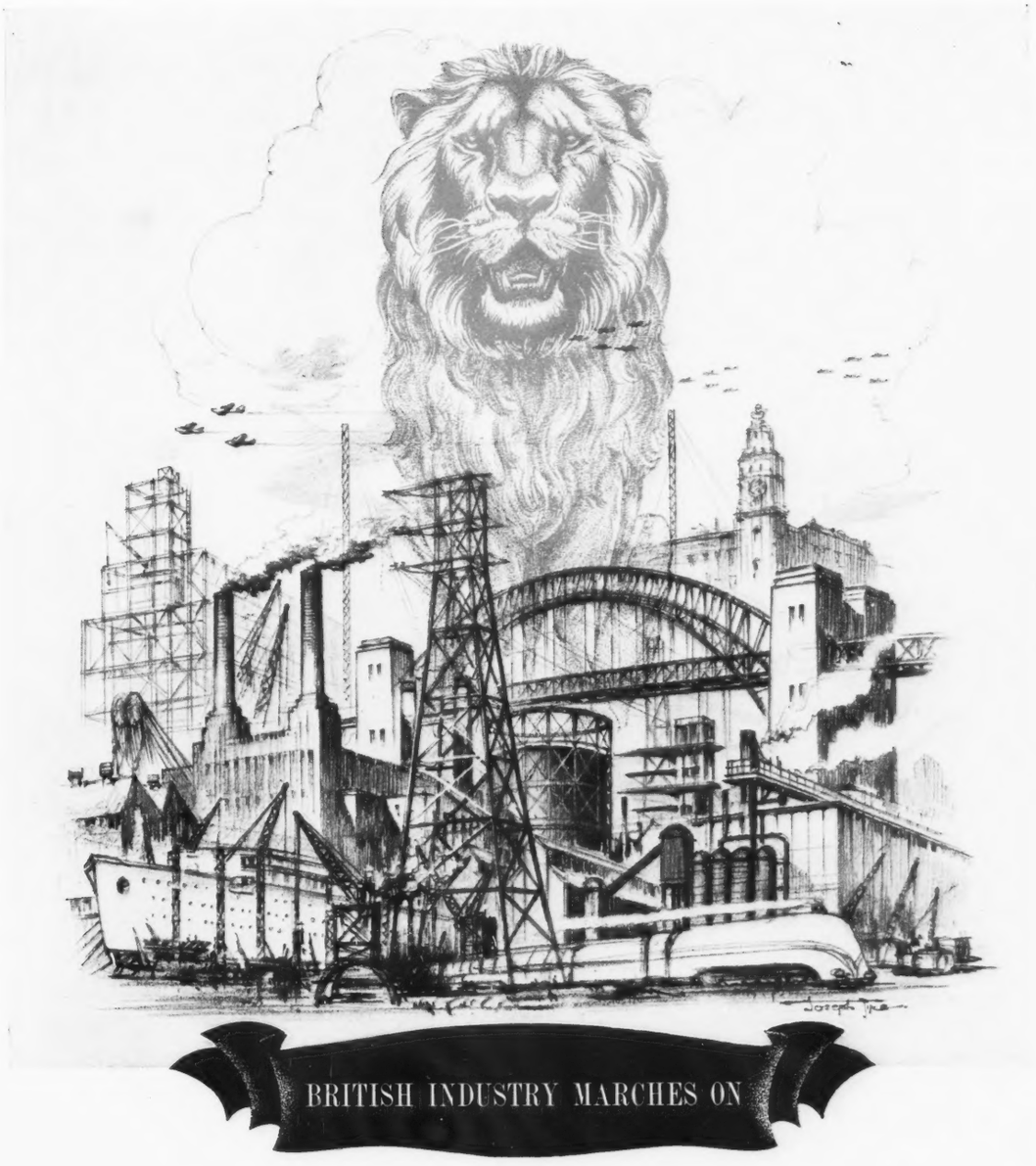
As in all storage units a big contribution to the decorative values can be made by careful selection or design of the accessories, and by their exact relationship to the forms in general. Thus the lighting may be associated with the mirror as in 3 and 7, where it is run in strips across the head of the mirror, or as in 2, where the spherical fitting is complementary to the circular mirror; or, yet again, as in 4, where two bracket fittings are placed over the junction of the mirrors, thereby emphasizing the thin vertical lines. Alternatively, the lighting may be a ceiling or wall point quite independent of the table yet obviously designed to work with it, as in 5 and 9. The drawer pulls or knobs, quite apart from having pleasing forms in themselves, should be carefully related in scale to the fronts on which they are mounted, and such comparatively minor items as hinges, stays and fixing studs should all contribute to that precision and exactness of design which is so essential in cabinet work.

7

7, built-in dressing table storage in a ship's cabin, part of one of the luxury flats included in the passenger accommodation in the Orient liner "Orcades" (Brian O'Rorke, architect). 8, a glass-topped dressing table in a house in Berkshire (Guy Morgan, architect). 9, a double fitment in the dressing-room of a house in Massachusetts, U.S.A. (Gropius and Breuer, architects). The bedroom can be seen through the glass panel above, to which a mirror is fixed.

8

9



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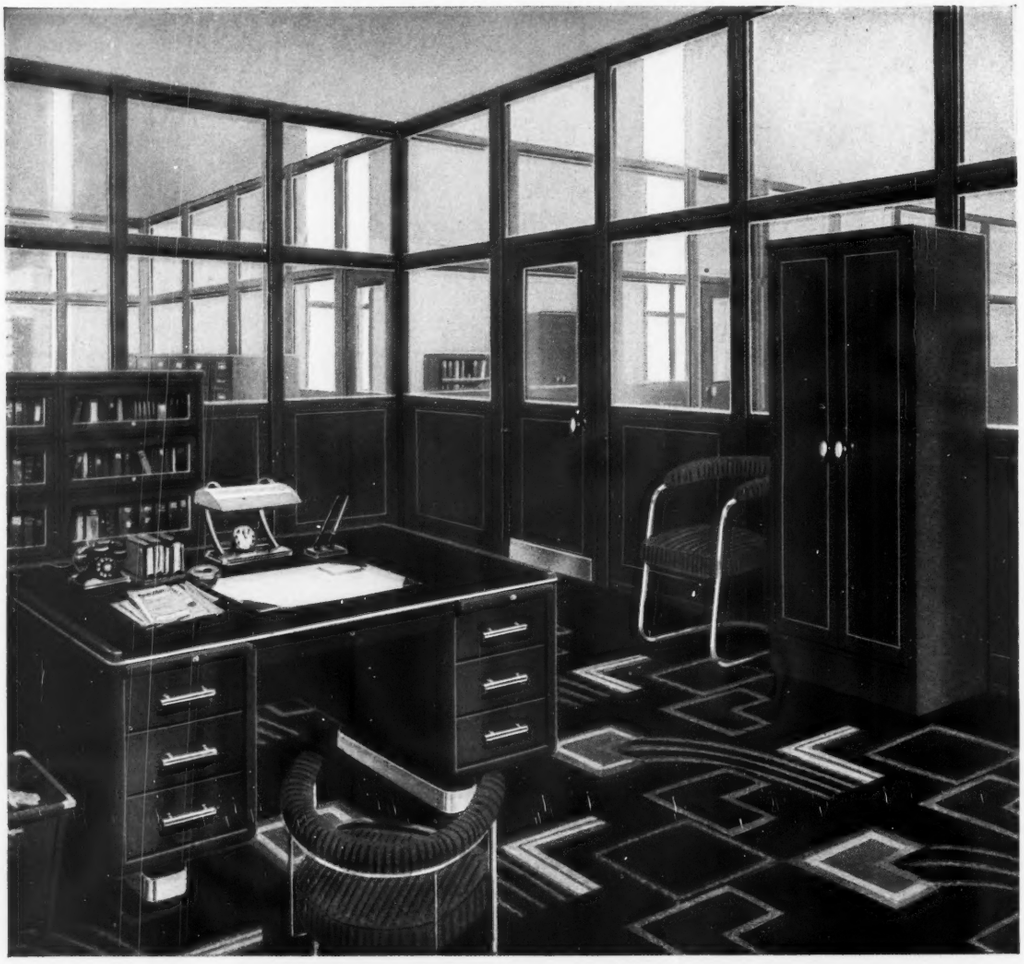

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ANTHOLOGY

Furnishing à la Mode

But we are keeping Lady Clavering and her friends too long waiting on the door-steps of Grosvenor Place.

First they went into the gorgeous dining-room—fitted up, Lady Clavering couldn't for goodness gracious tell why, in the middle-aged style, " unless," said her good-natured Ladyship, laughing, " because me and Clavering are middle-aged people "—and here they were offered the copious remains of the luncheon of which Lady Clavering and Blanche had just partaken. When nobody was near, our little Sylphide—who scarcely ate at dinner more than the six grains of rice of Amina, the friend of the Ghouls in the Arabian Nights—was most active with her knife and fork, and consumed a very substantial portion of mutton cutlets : in which piece of hypocrisy it is believed she resembled other young ladies of fashion. Pen and his uncle declined the refection ; but they admired the dining-room with fitting compliments, and pronounced it " very chaste,"—that being the proper phrase. There were, indeed, high-backed Dutch chairs of the seventeenth century ; there was a sculptured carved buffet of the sixteenth ; there was a sideboard robbed out of the carved work of a church in the Low Countries, and a large brass cathedral lamp over the round oak table ; there were old family portraits from Wardour Street, and tapestry from France, bits of armour, double-handed swords and battle-axes made of *carton-pierre*, looking-glasses, statuettes of saints, and Dresden china—nothing, in a word, could be chaster. Behind the dining-room was the library, fitted with busts and books all of a size, and wonderful easy-chairs, and solemn bronzes in the severe classic style. Here it was that, guarded by double doors, Sir Francis smoked cigars, and read *Bell's Life in London*, and went to sleep after dinner, when he was not smoking over the billiard-table at his clubs, or punting at the gambling-houses in St. James's.

But what could equal the chaste splendour of the drawing rooms ? The carpets were so magnificently fluffy that your foot made no more noise on them than your shadow : on their white ground bloomed roses and tulips as big as warming-pans. About the room were high chairs and low chairs, bandy-legged chairs, chairs so attenuated that it was a wonder any but a sylph could sit upon them, marqueterie tables covered with marvellous gimcracks, china ornaments of all ages and countries, bronzes, gilt daggers, Books of Beauty, yataghans, Turkish papooshes, and boxes of Parisian bonbons. Wherever you sate down there were Dresden shepherds and shepherdesses convenient at your elbow ; there were, moreover, light-blue poodles and ducks and cocks and hens in porcelain ; there were nymphs by Boucher, and shepherdesses by Greuze, very chaste indeed ; there were muslin curtains and brocade curtains, gilt cages with parroquets and love-birds, two squealing cockatoos, each out-squealing and out-chattering the other ; a clock singing tunes on a console-table, and another booming the hours like Great Tom, on the mantelpiece ;—there was, in a word, everything that comfort could desire, and the most elegant taste devise. A London drawing-room fitted up without regard to expense is surely one of the noblest and most curious sights of the present day. The Romans of the Lower Empire, the dear Marchionesses and Countesses of Louis XV., could scarcely have had a finer taste than our modern folks exhibit ; and everybody who saw Lady Clavering's reception rooms was forced to confess that they were most elegant ; and that the prettiest rooms in London—Lady Harley Quin's, Lady Hanway Wardour's, or Mrs. Hodge-Podgson's own, the great Railroad Crœsus' wife, were not fitted up with a more consummate " chastity."

W. M. THACKERAY

(*Pendennis*)

MARGINALIA

News of the Societies

The October number of the journal of the *COMMONS, OPEN SPACES AND FOOTPATHS PRESERVATION SOCIETY* makes an appeal for funds in the form of an announcement that the year 1940, the seventy-fifth year of the Society's existence, was to have been made the occasion of a special public appeal, but that this appeal has been postponed for the duration of the war. Funds, however, it is hardly necessary to say, are still needed and deserved, as the Society continues to keep a very watchful eye on matters that come within its scope.

The subject of the preservation of statutory rights of way, incidentally, has become especially important since the issue of the Defence Regulations which have made trespass on agricultural land, in certain circumstances, liable to a fine of £50. The notice " Trespassers will be Prosecuted " is thus no longer an empty threat.

Other items of interest in the Report are an account of County Court proceedings in which the Aberdare Urban District Council got a disputed right of way established by a decision that should provide a valuable legal precedent, and a note on milestones and the necessity of their careful storage during the period when they are banned from the roads. A letter on this subject from Sir Lawrence Chubb, Secretary of the Society, recently appeared in *The Times*. That such a reminder is necessary—indeed, that much wanton damage has already been done—is indicated by stories one has heard, especially the story that certain Local Authorities, to save the trouble of uprooting and storing their milestones, sent men round to deface them with a chisel. An equally disgraceful practice is suggested by a recent remark in *The Evening Standard* that milestones " are tempting trophies to people who have a motor-car and a secluded garden."

The annual report of the *CAMBRIDGE PRESERVATION SOCIETY* necessarily reflects restricted activities; but its work is continuing and its membership is being maintained. Mention is made in the Report of the negotiations about the Gog Magog Hills, of the planting of poplar trees along the Coton-Grantchester road, of repairs to Bown Mill and of maintenance work on various estates owned by the Society.

The October number of *Keystone*, the journal of the *ASSOCIATION OF ARCHITECTS, SURVEYORS AND TECHNICAL ASSISTANTS*, is naturally concerned with war-time issues such as shelters and evacuation, subjects on which the Association has lately made itself such a reputation, so that it can now claim to speak with the voice of a large part of the architectural profession. In this number it is made clear that the various committees are still pursuing their researches ; there is also a good leading article on A.R.P. policy and one by R. F. Skinner on types of bomb-proof shelter.

A recent activity of the Association is the formation of a Technical Panel whose members are available to give school teachers, tenants of flats, industrial works committees, etc., technical advice on shelters and similar matters.

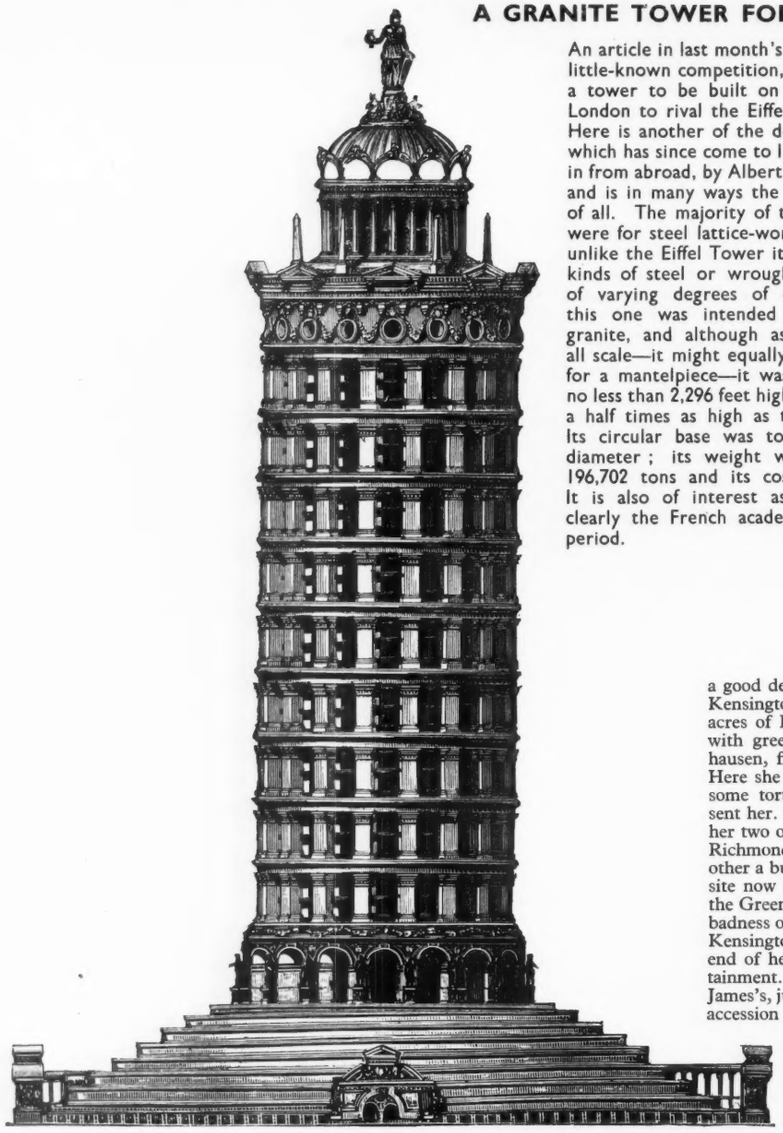
Eric Gill

Few artists have had such intimate and continuous connection with architecture as Mr. Eric Gill, the sculptor, typographer, engraver and publicist, who died on November 17th at the age of only 58. His best sculpture had a marked architectural quality, partly due to the fact that it was conceived from the beginning as part of the building it was intended to decorate—he was always successful in avoiding the various perils that beset the " studio " artist—partly because of his life-long insistence that the craftsmanship aspect of art must be predominant, and partly perhaps because his early training as a monumental carver influenced all his work. Although he never practised architecture he worked for a time—from 1899 onwards—in the office of Mr. W. D. Caroë.

His most celebrated sculptures were probably the Stations of the Cross he designed and carved for Westminster Cathedral. These were in low relief in Hopton Wood stone and were completed in 1914. He decorated several other notable buildings, but it is unfortunate that the work of his that the public sees most often, the figures of Prospero and Ariel over the entrance to Broadcasting House, London, is not amongst his best.

It is more probable, however, that posterity will remember him best for his lettering. He was inspired by this craft when he studied under Edward Johnston at the Central School of Arts and Crafts, and the great virtue of his work was that although he himself

A GRANITE TOWER FOR LONDON



An article in last month's issue described a little-known competition, held in 1890, for a tower to be built on the outskirts of London to rival the Eiffel Tower in Paris. Here is another of the designs submitted, which has since come to light. It was sent in from abroad, by Albert Brunel of Rouen, and is in many ways the most astonishing of all. The majority of the other designs were for steel lattice-work structures not unlike the Eiffel Tower itself, or for other kinds of steel or wrought-iron structure of varying degrees of originality; but this one was intended to be of solid granite, and although as drawn it lacks all scale—it might equally be an ornament for a mantelpiece—it was intended to be no less than 2,296 feet high, nearly two and a half times as high as the Eiffel Tower. Its circular base was to be 574 feet in diameter; its weight was calculated at 196,702 tons and its cost at £1,104,325. It is also of interest as reflecting very clearly the French academic taste of the period.

became an exceptionally fine craftsman, he always understood that today lettering really means movable type and its ever-increasing mechanical complications. He never shirked the implications of machine-production, as the success of his world-famous type-faces prove: first his Sans-serifs and later his Perpetua and Bunyan.

Like William Morris, Eric Gill never saw art except as an inseparable part of life and, in his case, devotion to the Roman Catholic Church. His many writings, perverse and polemical though most of them are, reflect this conviction and did much to stir up the stagnant waters of conventional æsthetic theory.

The Hawthornden Prize

The 1940 recipient of the Hawthornden Prize for Literature, which is awarded each year for a distinguished work of imagination, has just been announced. For the first time—unless we are mistaken—it has been given to a book with an architectural subject-matter: to Mr. James Pope-Hennessy's *London Fabric* (Batsford). Normally architectural books can hardly expect to compete in the category of "imagination," but this year the jury has interpreted the term widely, as including the imaginative and allusive treatment of such concrete things as history and buildings.

Mr. Pope-Hennessy's book was reviewed on these pages when it was published at the beginning of the year. Now the nostalgic spirit in which it was written has become more poignant; for the author conceived it in the autumn of 1938, when war first loomed close, as a record of the delicate associations and charms that certain London buildings held for him, put down before their spell was broken by their being engulfed in more vivid realities. It was a memorial to a period when the present was not so urgent as to interfere with enjoyment of the past.

The author described personal visits to St. Paul's Cathedral, Kensington Palace, Greenwich Hospital, Hampton Court and a number of other places in terms of the historical atmosphere they evoked, but also showed considerable erudition—especially as the possessor of out-of-the-way information—and aesthetic sensibility of an appealingly perverse kind. The quality of his writing is indicated by the following passages, quoted from the chapter on Kensington Palace:

Caroline of Ansbach, the first able English queen since Elizabeth Tudor, did a good deal towards the improvement of Kensington. Enclosing three hundred acres of Hyde Park, she made a garden with greenhouses like those at Herrenhausen, filled with oranges and lemons. Here she walked and kept squirrels, and some tortoises the doge of Venice had sent her. She was a literate woman, and her two outdoor libraries, one a grotto at Richmond called "Merlin's Cave," the other a building designed by Kent on the site now occupied by Stafford House in the Green Park, though not, owing to the badness of the roads, within easy reach of Kensington, provided her, towards the end of her life, with considerable entertainment. She died in 1737, at St. James's, just ten years after her husband's accession; as her health worsened she would walk regularly round the gardens at Kensington or, sitting in the arbour she had had constructed on an artificial mount there, gaze out over the new sheet of water called the Serpentine, evading the wind by the ingenious pivot device which made it possible to swivel the summer-house round at will.

"It's a strange delusion," I said to Perdita as we left Queen Caroline's drawing-room and entered the Presence Chamber which joins it to the grand staircase, "that makes people think of Tudor rooms as dark and with no windows, and eighteenth-century rooms as paradises of light. Have you ever been in a gloomier room than this; you can hardly see across it.". . .

The Presence Chamber contains an oblong picture showing William III and the Duke of Schomberg riding in a battle-piece, a full-length of Catherine of Russia, squat, ridiculous, in a wide hooped skirt with a colossal imperial crown jammed down upon her head, another of Peter the Great, and an astonishingly fine Kneller of an Oriental called Francis Couplet. In the centre of the room, by the fireplace, stands a stray sedan-chair. We passed through this room quickly, coming out upon the solemn, painted tumult of the staircase, built by Wren and redecorated by Kent. Perdita drew in her breath sharply: "I didn't expect *this*," she said, stepping forward and peering over the wrought banisters down at the black treads of Irish marble, and the chessboard squares paving each landing and the hall below. The princely appearance of this magnificent staircase would be hard to convey to someone who had not seen it. The walls are painted to simulate the plaster sides of an old house; on the upper part a gallery is shown, with an Ionic colonnade carrying an entablature and a frieze with the heads of unicorns, the masks of lions and foliage festoons, divided by fleurs-de-lis richly gilt. A balustrade runs the length of this scene; crowding against it are a number of people said to be courtiers of George I. For some odd reason the identities of these personages remain obscure; there are yeoman of the guard, and a young man in Polish dress said to be Mr. Ulric, a page of George I; on a plinth outside the balcony stands a second page, and other figures in the three compartments between the pillars on the north wall include two Turks who, taken prisoners by the imperial army in Hungary, attended George I when as Elector of Hanover he was wounded at the siege of Vienna; a Highlander; and Peter the Wild Boy, found in the woods of Herstwald near Hanover and brought to England in 1726 where he died some sixty years later. A fourth compartment occupies a part of the east wall, with more yeomen of the guard and some court ladies; beyond them in a niche is painted a figure of a Roman emperor, and round the landing where we stood these feigned niches are continued with grisaille statues of Apollo, Diana, Minerva and Hercules. Shadowy caryatides flank the doorway; gilded chiaroscuro panels and trophies ornament the walls of the hall beneath. In the centre of the ceiling four people look down, leaning over another balustrade; portraits, it is said, of Kent himself, two pupils, and a friend. Kent was not at all a good painter, but this staircase is as effective as it could well be; the solemnity and grandeur, the flippant note set by the crowded gallery, the pallid grisailles and chiaroscuro patterns, grey and magical and fine.

"It's rather a splendid conception, is it not?" I remarked, "pompous and yet not quite serious; less pretentious than that big Wren staircase at Hampton Court, but more fun. Here you can feel and see the people jostling up, the return of George II from Hanover, when Caroline would meet him at the gate of the courtyard and bring him up these stairs to welcome everyone in her long gallery. You can see it all."

The light, which at no time in that afternoon had been particularly helpful, was failing swiftly as we walked down the King's Gallery, passing between the pictures and the eleven tall windows through which we could see the narrow piece of lawn and the laurels, and beyond the railings the children and their nurses scurrying home to tea. The sky was darkening, and some big drops of rain began to fall; the nurses put up the hoods of their perambulators and pushed their charges all the faster down the tarmac paths. In the farthest distance lay the great crude banks of earth, routed up in the process of providing bomb-trenches in the park. We went slowly down the gallery, turning to look as we neared the farther door; it was empty, hollow-seeming, and mysterious, with the riding figures looming at the extreme end and the waning daylight glimmering through the windows, the marble fireplace ghostly white on the brown wall.

"Let's be quick," I said to Perdita, "before they turn on lights, or whatever they might do. That would spoil it so. Here we are in Queen Victoria's childhood; do you feel up to it now?"

Coming from the long gallery, one steps abruptly from the world of William and the Georges, heavy, portentous, and finely spaced, into the hugger-mugger gaiety of Queen Victoria's childhood. With admirable piety these rooms have been restored to their pristine Victorian state. Here are the bright chintz birds upon the bedroom walls, the papier-mâché tables, the woolwork, the chairs, the dolls-house, the battered toys, that little Princess Victoria must have loved.

We hurried past these royal relics and

CHAPEL AT MORETONHAMPSTEAD, DEVON.

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"*I am able to assure you that my clients are very pleased indeed*" —so wrote the architect, F. W. Anderson, of Torquay, when giving us permission to publish these photographs, and the two views taken after the completion of the work show the very good reason for this satisfaction. The outer walls were of good solid masonry, two feet thick, but this was not sufficient to keep out the driving rains, and the deplorable condition they had reached is clearly seen in the other photographs taken before the work was commenced. This work consisted of stripping the old plaster from the interior surfaces of the walls, and replastering with two coats of sand and cement made completely impervious by simply adding 5 lb. of 'PUDLO' Brand waterproofer to each 100-lb. of the cement, finished with a skimming of gauged lime putty and sand setting stuff, thus providing a porous surface which prevents condensation. The specification was the same as that used with equal success in many hundreds of similar cases—often upon the recommendation of sanitary inspectors who would otherwise have been forced to condemn the buildings as unfit for habitation. If you are interested, ask for Specification 4.B and a copy of the leaflet "Weatherproof Walls."

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on through the Great Drawing-Room into the Cupola Room, Kent's most famous, and perhaps his greatest work. Here the high ceiling is domed, and the four sides are coated with the star of the Garter; the walls are panelled with oak, and upon them arms, flags and trophies are painted in gold and brown. The door-cases are of polished white marble, with Ionic pilasters and weighty entablatures surmounted by a bust. Six niches of white marble round the room hold gilded leaden effigies of deities—Ceres, Mercury, Venus, Minerva, Bacchus, Apollo, and on brackets above them were once set "busts" of Roman poets. In the centre of the room stands a hideous and enormous clock, "the Temple of the Four Great Monarchies," with silver reliefs of Augustus, Ninus, Cyrus, and Alexander, the whole constructed for Augusta Princess of Wales.

We groped our way to a corner in the gathering gloom, and gazed up at the domed roof, now filled with shadows, and across at the white doorways, the niches, the gods and goddesses of deep, shimmering gilt. It is an impressive room, a pompous room, even a magnificent room; but it is lonely, lonely and cold.

National Gallery Exhibition

Although the authorities have decided—no doubt wisely—to postpone the second exhibition of "British Art since Whistler", which the National Gallery had announced for this autumn, they have refused to allow circumstances to defeat them altogether. On November 20th there opened at the National Gallery a less ambitious and less comprehensive show, but one which is full of interest, and of an unusually high average quality. The public will be more than grateful for an opportunity of looking at pictures that is rare in these times. In keeping their exhibitions going with such bravery the National Gallery is performing in the world of art the same valuable service that its lunch-time concerts have already performed in the world of music.

This new exhibition is in two parts. One a mixed but very representative collection entitled "Some Drawings of the Past Fifty Years"; the other a fine collection, over a hundred in number, of drawings by Augustus John. The virtuosity of John's drawings is so celebrated that nothing need be said except that this is a rare chance of seeing drawings of many periods side by side. In the mass they make it clear why as a draughtsman he is already an Old Master. Although some of them are so reminiscent as to get very near to pastiche, they have a control and economy that his paintings have often lacked.

The mixed exhibition covers the ground from the nineties to the present day in catholic fashion. Artists particularly well represented are Paul Nash, Gwen John and Wilson Steer. A less known artist whose excellent impressionist studies will perhaps come as a surprise to people who have not a detailed knowledge of this period is William Frederick Mayor (1865–1916).

CORRESPONDENCE

Richard Watt

The Editor,

THE ARCHITECTURAL REVIEW

Sir,

I am extremely interested in the article* under the title "An Unprofessional Genius" describing the work Richard Watt carried out at Knutsford in Cheshire, since it happened that at the time Watt was erecting these buildings in Knutsford, I was living, as a boy, at Mobberley, about four miles away, and well remember the controversy excited by these very out-of-the ordinary buildings. Some of the comments were favourable but most were unfavourable. The writer's own boyish reaction was that he thought the houses in Legh road looked very nice and were certainly most interesting, but seemed strangely out of place, and that some of them might be dark inside owing to the small number and small size of the windows.

Trying to recall something of the contemporary attitude as I encountered it—no easy task after the lapse of such a long time—I think the feeling was that some at least of Watt's houses, and especially the laundry, were exceedingly picturesque, but the houses were unpractical. They were considered to be little more than copies of Italian architecture, and there was a really strong feeling of resentment at the introduction to a quaint little town like Knutsford, with a charm all its own, of a large amount of building which startled by its failure to harmonise and seemed to intrude.

All the criticisms I remember hearing were made by people without architectural knowledge but with reasonable taste and no pretentions, and their attitude, I think it will be agreed, was not indefensible. If Watt had isolated his work by purchasing land just sufficiently remote from an existing town with its own different kind of picturesqueness, he would have avoided arousing this prejudice and his buildings would have been more fairly considered on their merits.

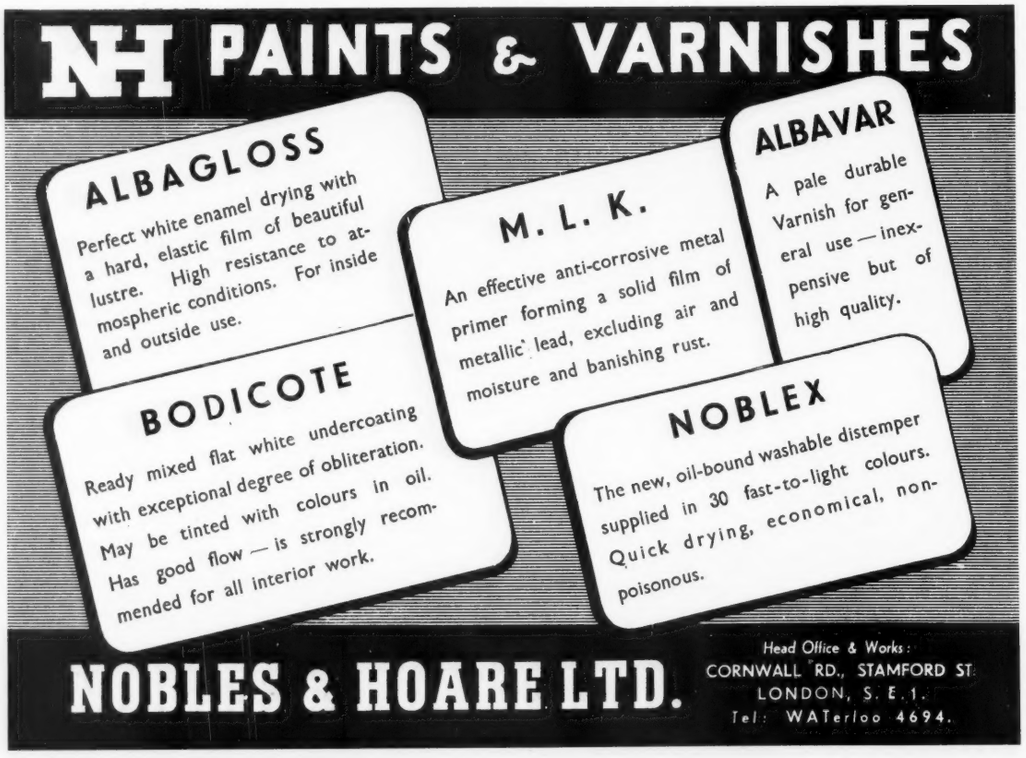
I do not recollect ever hearing an unfavourable criticism of Watt's café or the Gaskell Memorial Tower in the lower street. On the contrary, especially as regards the latter, I recollect hearing strong admiration expressed.

Yours, etc.

J. H. FILDES.

Dartford, Kent.

* In THE ARCHITECTURAL REVIEW for October, 1940.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Architect: Kenneth Lindy.

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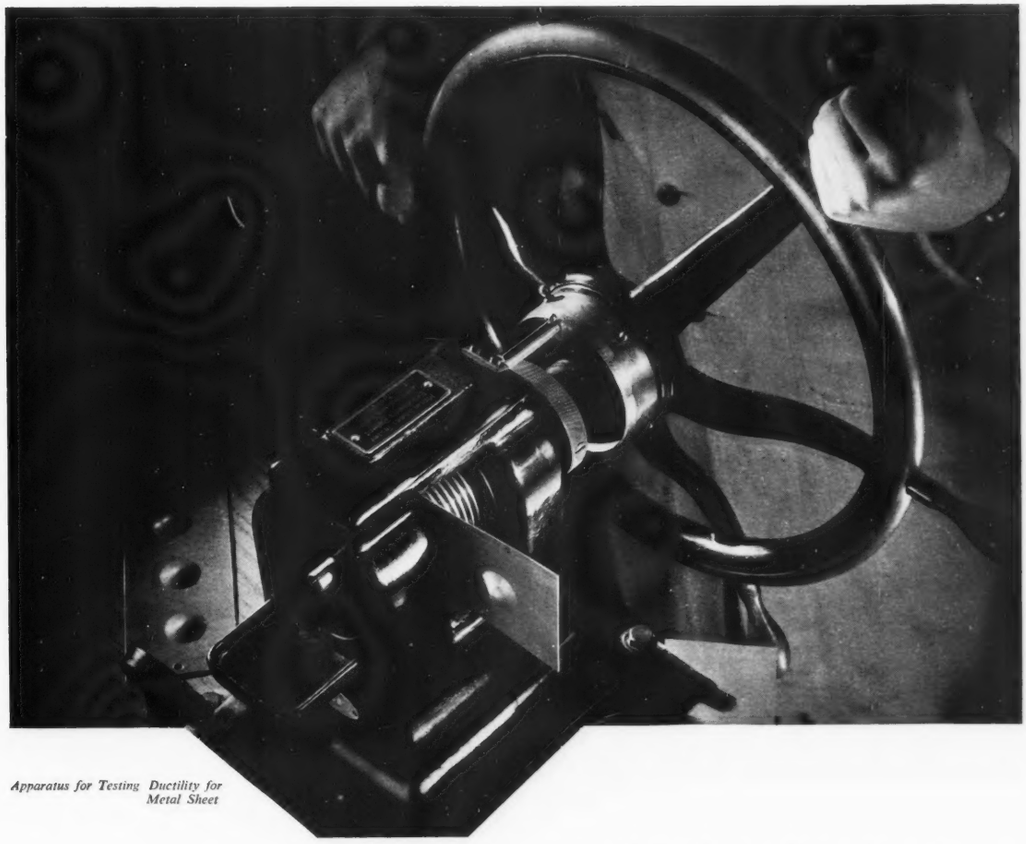

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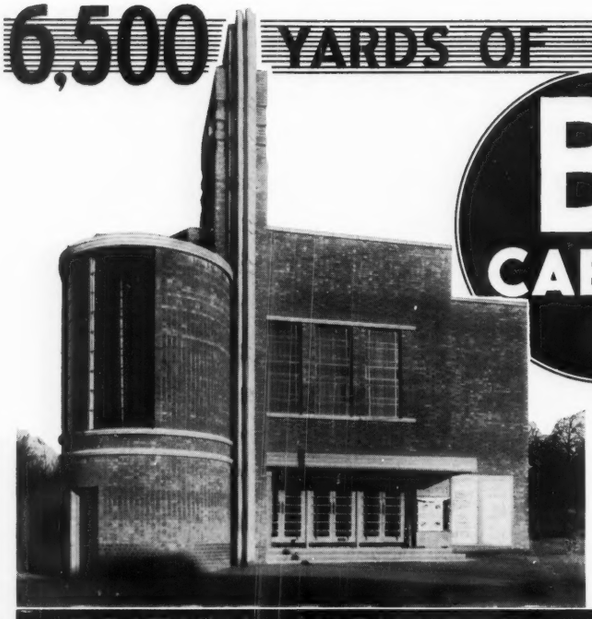

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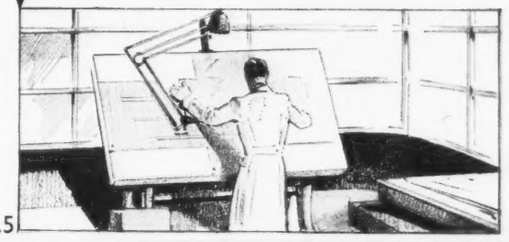

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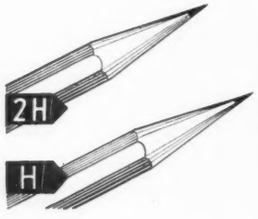

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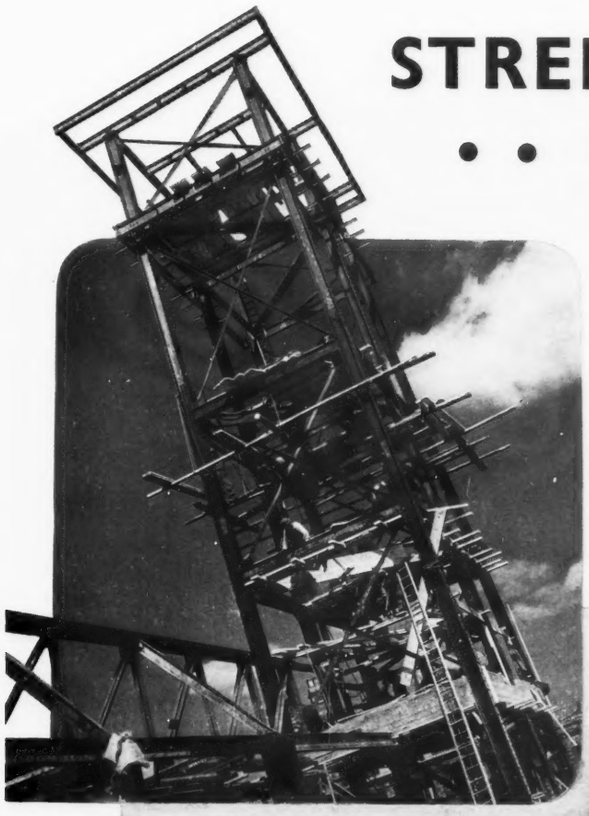

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	PAGE
Accrington Brick & Tile Co.	—
Aluminium Union, Ltd.	xxvii
Architectural Press, Ltd.	ii, xviii, xxx, xxxiii
Bakelite, Ltd.	xiv
Baldwin, Son, & Co., Ltd.	xxxi
Bowran, Robert, & Co., Ltd.	—
Boulton & Paul, Ltd.	—
Braby, Fredk., & Co., Ltd.	vi
Brown, James M.	xxix
British Insulated Cables, Ltd.	xxviii
British Reinforced Concrete Engineering Co., Ltd. (London & Manchester)	xxxiv
Burma Teak Shippers	xii
Callender, G. M., & Co., Ltd.	—
Cellactite & British Uralite, Ltd.	—
Cellon, Ltd.	—
Celotex, Ltd.	xi
Chatwood Safe Co., Ltd.	—
Dawnays, Ltd.	v
Eagle Pencil Co.	xxx
Firth-Vickers Stainless Steels, Ltd.	viii
General Electric Co., Ltd.	xix
Glenfield & Kennedy, Ltd.	xxv
Haden, G. N., & Sons, Ltd.	xv
Hammer, Geo. M., & Co., Ltd.	—
Hartley & Sugden, Ltd.	—
Haywards, Ltd.	xvi
Higgs & Hill, Ltd.	xiii
Hope, Henry, & Sons, Ltd.	vii
Horseley Bridge & Thomas Piggott, Ltd.	x
Kearsley, Robert, & Co.	xxviii
Kerner-Greenwood & Co., Ltd.	xxiii
King, J. A., & Co., Ltd., London	xxxii
Leaderflush	xx
Limmer & Trinidad Lake Asphalt Co., Ltd.	—
Lloyd Boards, Ltd.	xxvi
Mallinson, William, & Sons, Ltd.	—
Manlove, Alliott & Co., Ltd.	xxxi
Mather & Platt, Ltd.	—
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Messenger & Co., Ltd., Loughborough	—
Metropolitan-Vickers Electrical Co., Ltd.	—
Minton Hollins, Ltd.	xxx
Northern Aluminium Co., Ltd.	xxi
Nobles & Hoare, Ltd.	xxiv
Patent Impermeable Millboard Co., Ltd.	xxxi
Pilkington Bros., Ltd.	ix
Prodorite, Ltd.	xxx
Rackstraw, G. T., Ltd.	—
Red Cross & St. John Fund	xxxiii
Redpath, Brown & Co., Ltd.	iii
Riley Stoker Co., Ltd.	xx
Ruberoid Co., Ltd.	—
Sankey Sheldon	xxii
Stuart's Granolithic Co., Ltd.	—
Tentest Fibre Board Co., Ltd.	—
Troughton & Young, Ltd.	—
Venus Pencil Co., Ltd.	xxix
Walker, Crosweller & Co., Ltd.	xxx
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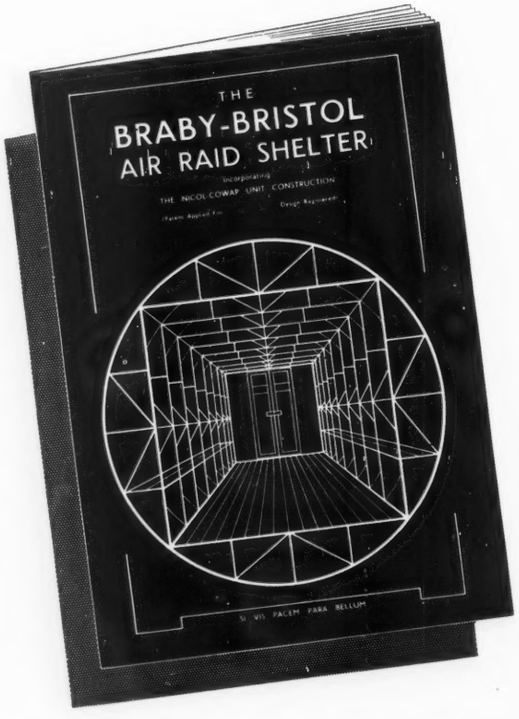

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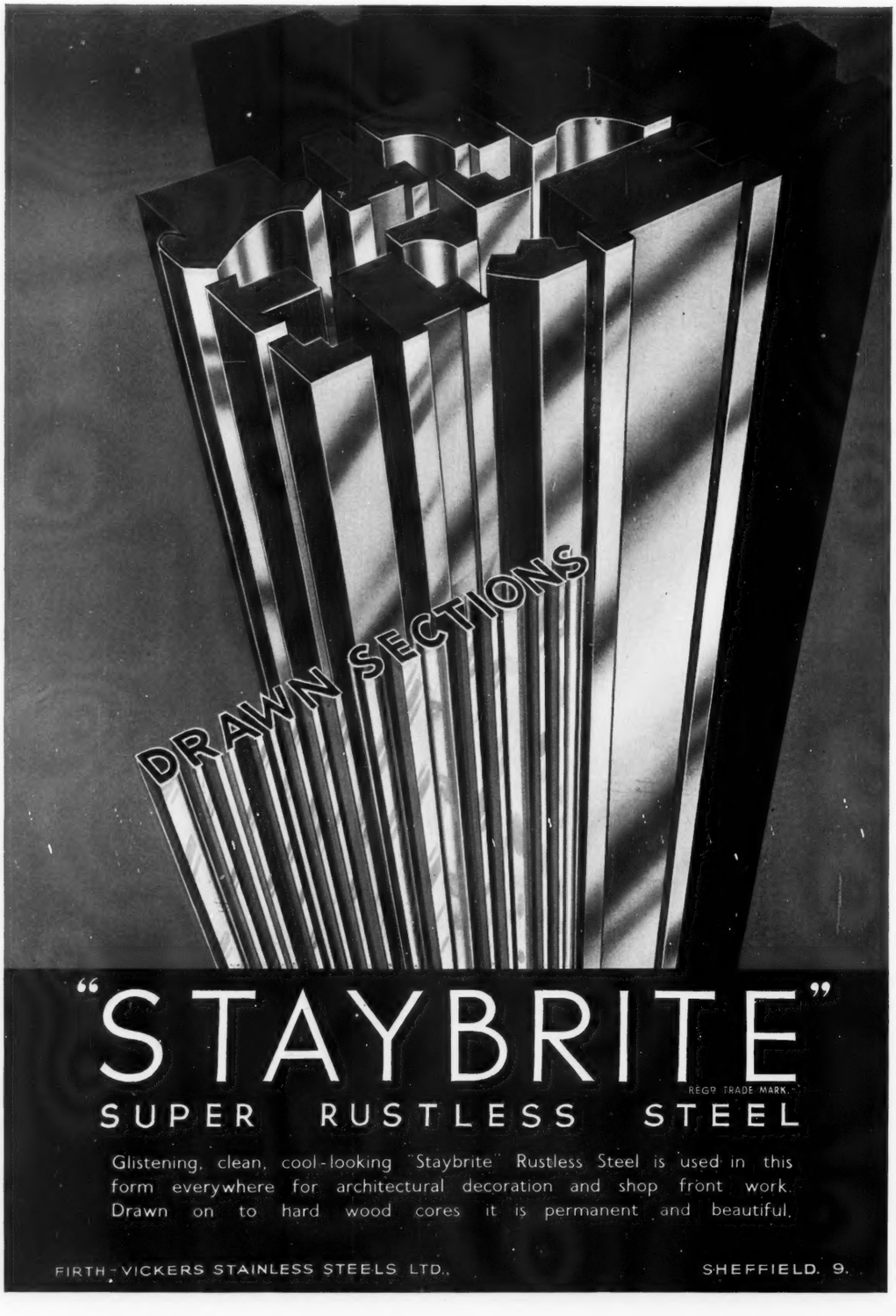
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To the Architects and Builders of to-day and to-morrow

TO-MORROW—A NEW SPIRIT IN DESIGN

What part is glass going to play in the rebuilding that must follow after the war? A few years ago, we suggested that if London and some of the other cities in this country were ever rebuilt extensively, glass as a structural material might well inspire stupendous and splendid changes in the character of architecture. A committee of well-known architects proved by their various interpretations of this thought that it was not just fantasy. We did not then anticipate the necessity for rebuilding which the war may bring about in London and other cities; but not since the Great Fire of 1666 has the capital been faced with so great a threat of destruction or so large a possibility of architectural rebirth.

Already in America the architectural profession and the building industry are regarding the stresses and strains to which our cities are being subjected in the light of a gigantic experiment—a large-scale research into the future character of building materials; not because it is supposed that the world is committed to a long cycle of wars; but because the exceptional behaviour of some materials under abnormal and unexpected conditions does open up fresh and sometimes amazing possibilities for the architects of to-morrow. We shall be ready, when the time for rebuilding comes, to put before architects and builders an array of materials that may conceivably make the glass age a reality and not an idea; and it is not too much to anticipate that, as a reaction from this darkened period, as a gesture of escape from the black-out and all its limitations, people everywhere will demand more and more light, will demand that every ray of sunshine, every scrap of daylight is coaxed into homes, offices, factories and public buildings.

TO-DAY—REPLACEMENT AND REPAIRS

For the present those who are concerned with the care of buildings are quite rightly pre-occupied with the task of repairing war damage and, if not preventing it, at least seeking measures which will minimise the effects of bombardment. Glass, as a material, has provided a number of problems under war conditions. When windows have been smashed as a result of blast from bombing, the problem of reglazing should be regarded not merely as a matter of replacement. Nothing on earth can make glass bombproof; but extra strength can be obtained, and there are special glasses which do offer a much greater resistance to blast than ordinary glass. Before any particular glass is specified, it is worth scrutinizing the advantages in the way of additional strength which may be obtained by reglazing with a thicker glass: for instance, replacing 24-oz. sheet glass with 32-oz., or with ¼-in. Polished Plate. Specialised glasses and glass units, with exceptional powers of resistance, include "Armourplate" Glass, "Armourlight" Lenses, Insulight Glass Bricks, and Wired Glass. Their properties are summarised here.

1. "ARMOURPLATE" GLASS

"ARMOURPLATE" Glass has special powers of resistance to shock and impact, and to high temperatures. It is produced in thicknesses ranging from $\frac{3}{16}$ in. to 1¼ in. Its resistance to severe impact is five to six times that of ordinary Polished Plate Glass of the same thickness.

When broken, this glass disintegrates into innumerable fragments neither large nor sharp enough to cause serious injury. It does not splinter, and possesses to the full the transparency, lustre, and flatness of ordinary Polished Plate Glass. In connection with official tests with 500–1,000 lb. bombs bursting at distances of 50 ft. or more, A.R.P. Handbook No. 5 "Structural Defence," states: "¼-in. toughened glass,* solid or hollow building lenses or glass bricks set in concrete frames are highly resistant to blast."

2. "ARMOURLIGHT" LENSES

Toughened Lenses have been specially manufactured for fixing into concrete. They can be used for a flat roof, or, in the case of vertical walls, by building them up in the form of a pre-cast panel. These lenses are specially toughened and provide approximately twenty times greater resistance to impact than a similar lens in ordinary annealed glass. Toughened lenses have the same characteristic break as "ARMOURPLATE" glass, and in the event of a lens breaking it will exert a lateral thrust upon the concrete in which it is fixed and remain firmly in position. Official tests have proved that they are highly resistant to blast pressure. In addition, they provide full protection against an incendiary bomb burning on the surface of the lens, and have resisted the high temperatures of thermite and kilo electron bombs.

When double-glazed "ARMOURLIGHT" Toughened Lenses are used they give considerable protection from direct impact. A very severe test of their resistance was made by firing a ·45 Colt Revolver at distances of 10, 7 and 5 yards. The lenses were fixed in 5-in. thick concrete slabs. The results of such a drastic experiment may be regarded with satisfaction. In double-glazed units the front lens was pierced (and fractured), but there would still have been protection for any person behind the glass, for the rear lens was undamaged, even at 5 yards range. Second shots were fired in some cases, and the results showed that a front lens which has already been fractured still affords considerable protective value to the rear lens.

3. INSULIGHT GLASS BRICKS

These are hollow glass units made in two halves and sealed together, and are designed for use in vertical walls. Glass Bricks are laid in the same way as ordinary bricks, but being a non-load-bearing unit they should be regarded as a panel within a structure. They are highly resistant to blast pressure, and, as a result of a test at the Building Research Station Fire Testing Station they have been classified Grade D under the conditions of the British Standard definitions No. 476, as a fire-resisting building material.

4. WIRED GLASS

This is a well-known type of glass, but its efficiency, especially in war-time, is not perhaps fully appreciated. There have been certain references in A.R.P. publications on the effectiveness of wire netting placed over windows as a measure of protection, but in wired glass the wire netting is actually embedded and firmly fused into the middle of the glass itself. In the former case it is highly probable the blast will break the glass, the fragments become dislodged, and the wire netting *may* remain in the aperture: the aperture itself, however, will be left fully open to the weather.

Wired reinforced glass, on the other hand, is highly resistant to blast pressure, and although the glass may be cracked, the wire holds it together as a complete panel and, except in cases of extreme severity, remains in the window opening.

A department for Technical Problems

This advertisement is issued by Pilkington Brothers Ltd. Our Technical Department, at St. Helens, Lancashire, is always available for consultation on the use of glass under present conditions, in A.R.P. work, and in any form of structural work.

* *The toughened glass referred to is* "ARMOURPLATE."

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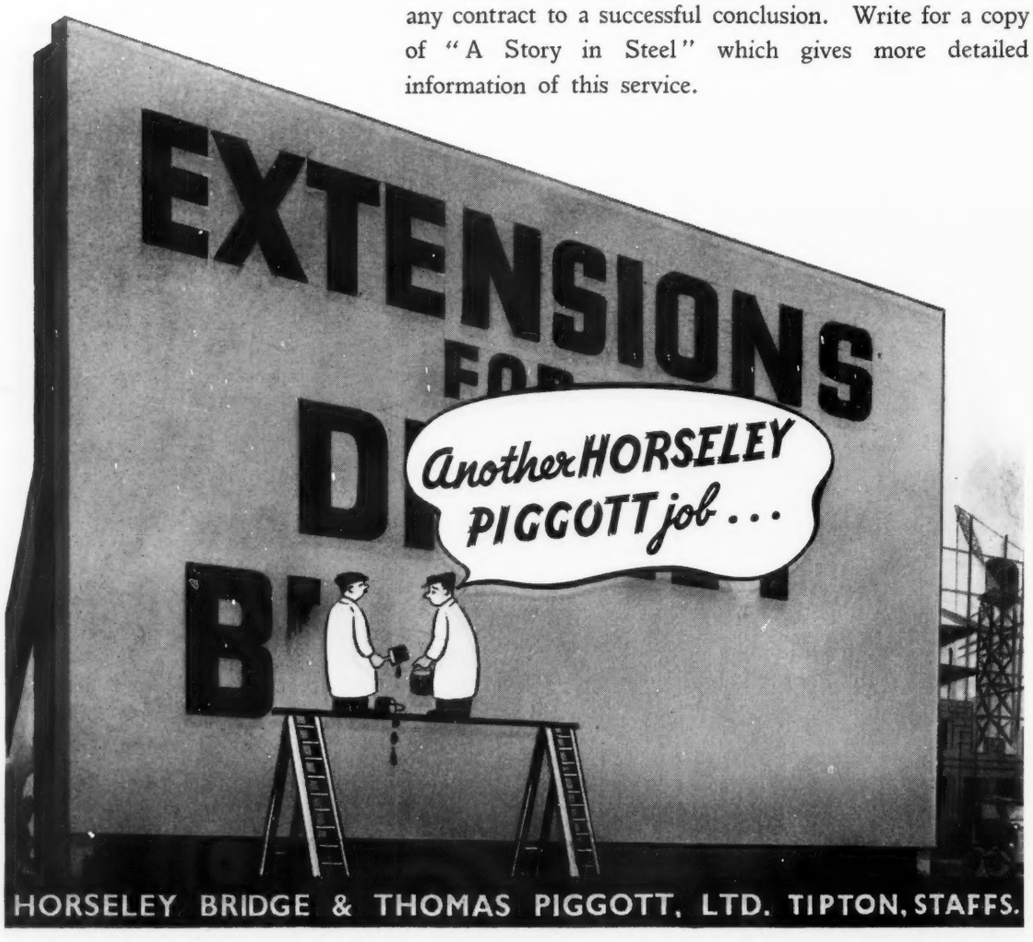

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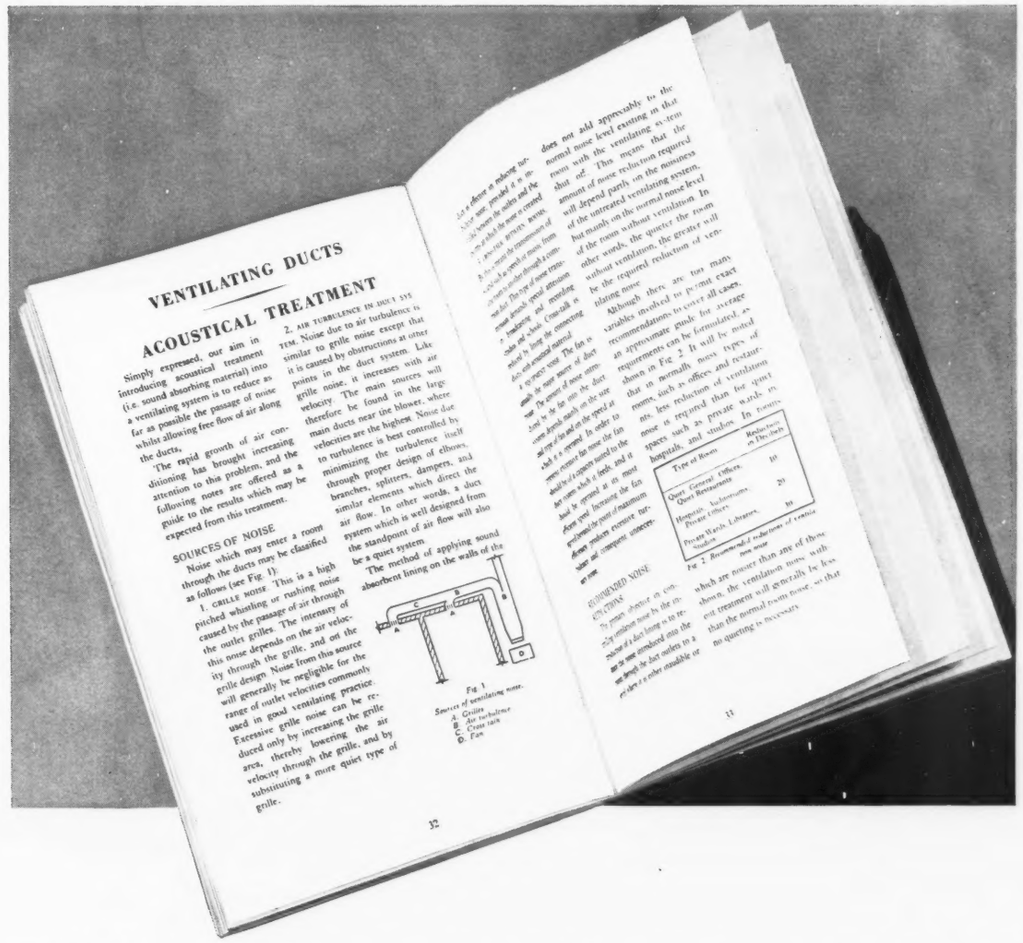

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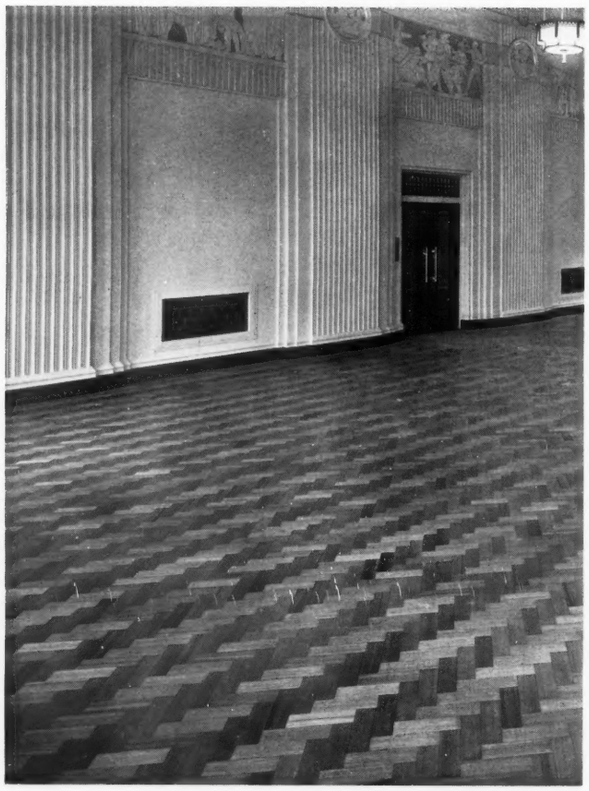

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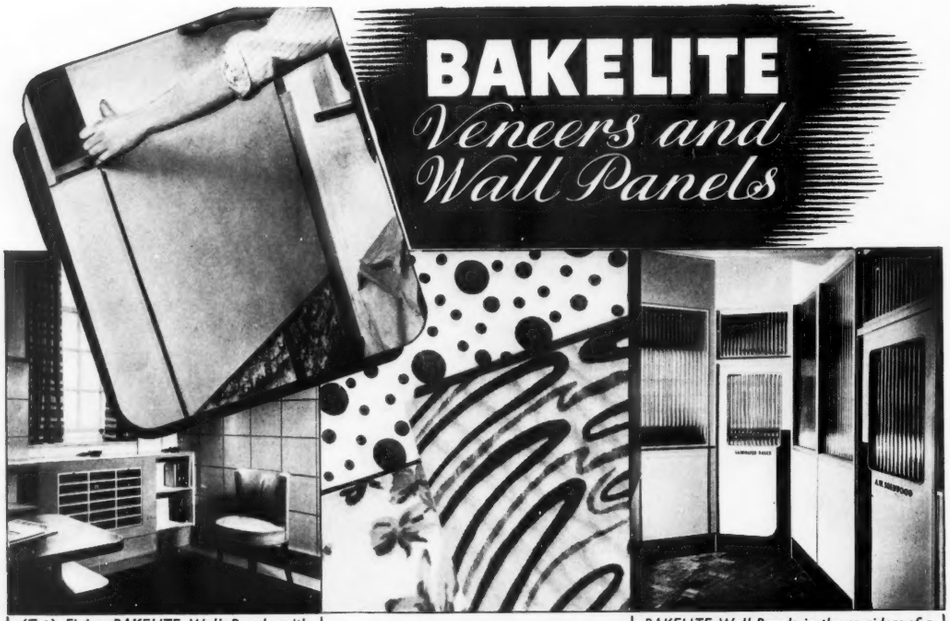

(Top) Fixing BAKELITE Wall Panels with metal beading. (Above) BAKELITE Veneers in a modern reception office.

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BAKELITE Wall Panels in the corridors of a suite of offices. The particular colour scheme is brown and pink.

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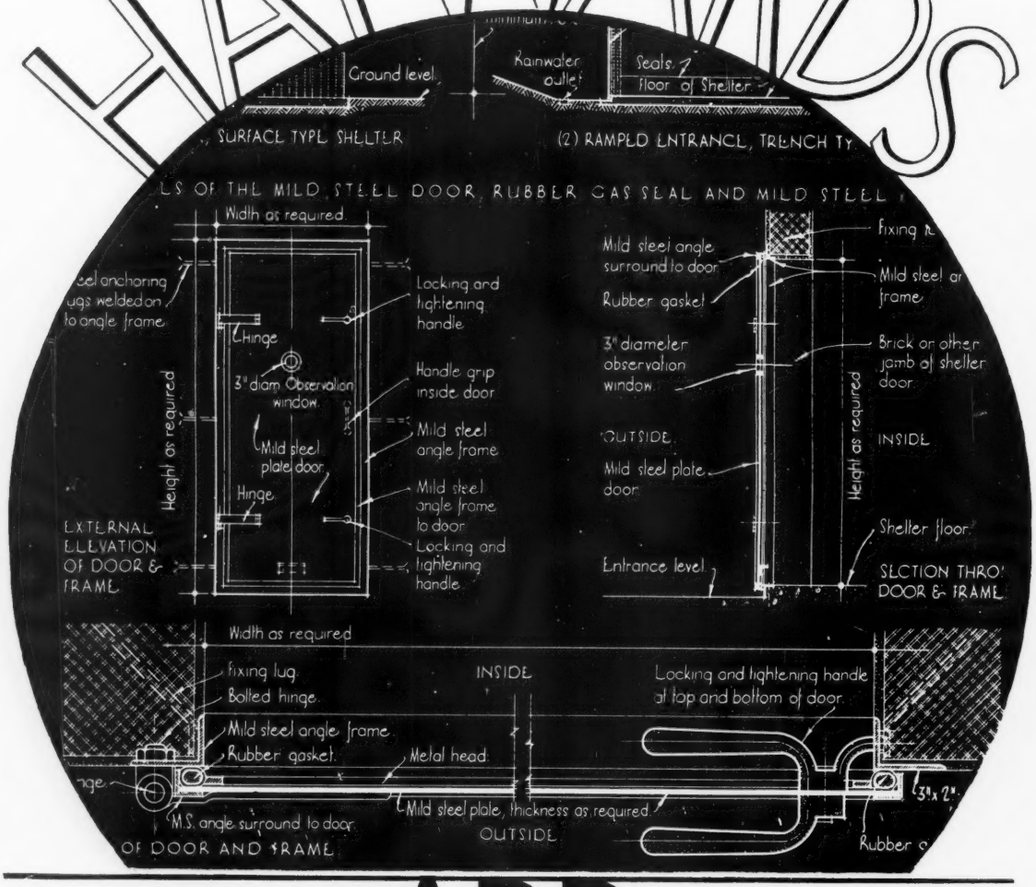

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The object of Information Sheets is to present in a diagrammatic and standardized form, which is capable of quick and easy reference, information of the kind which is constantly needed in an architect's office, such as facts about building materials, equipment and methods, general planning and construction data.

So as to facilitate easy reference, the index in Volume 5 covers the sheets contained in the previous four volumes. These are bound in limp Rexine by the "Spirax" process in order to enable them to open flat at any page. If desired the volumes may be obtained in loose-leaf portfolios.

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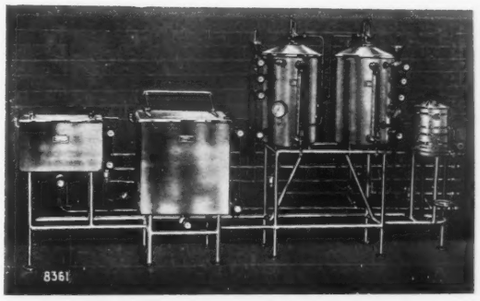

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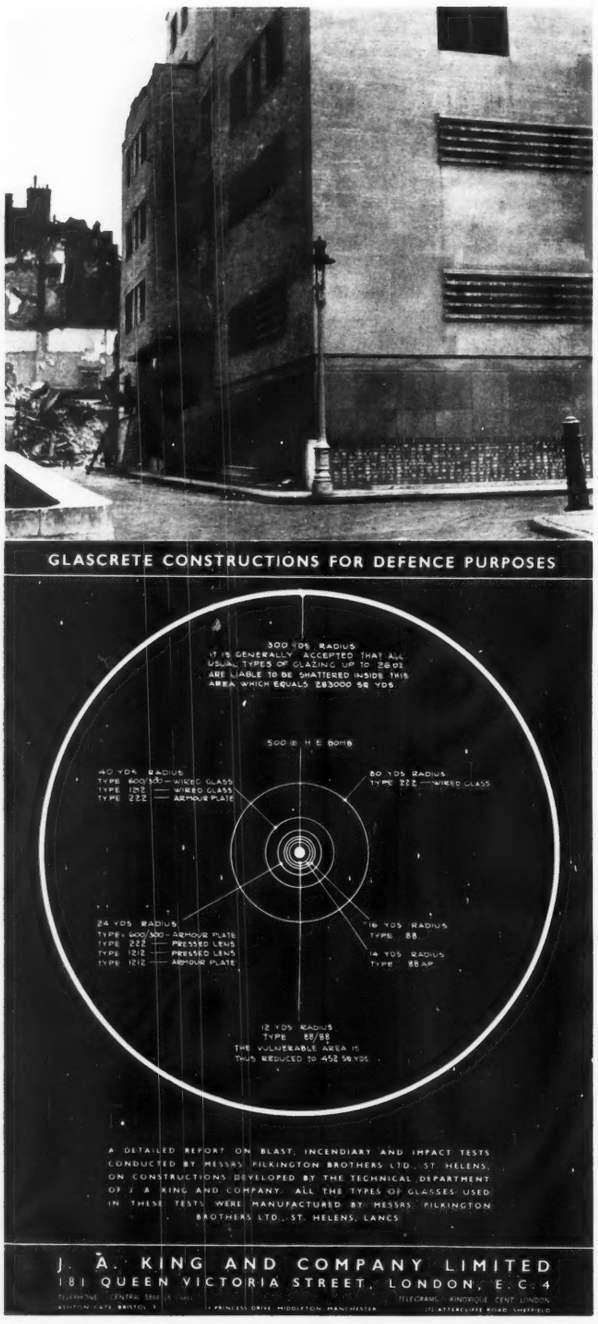
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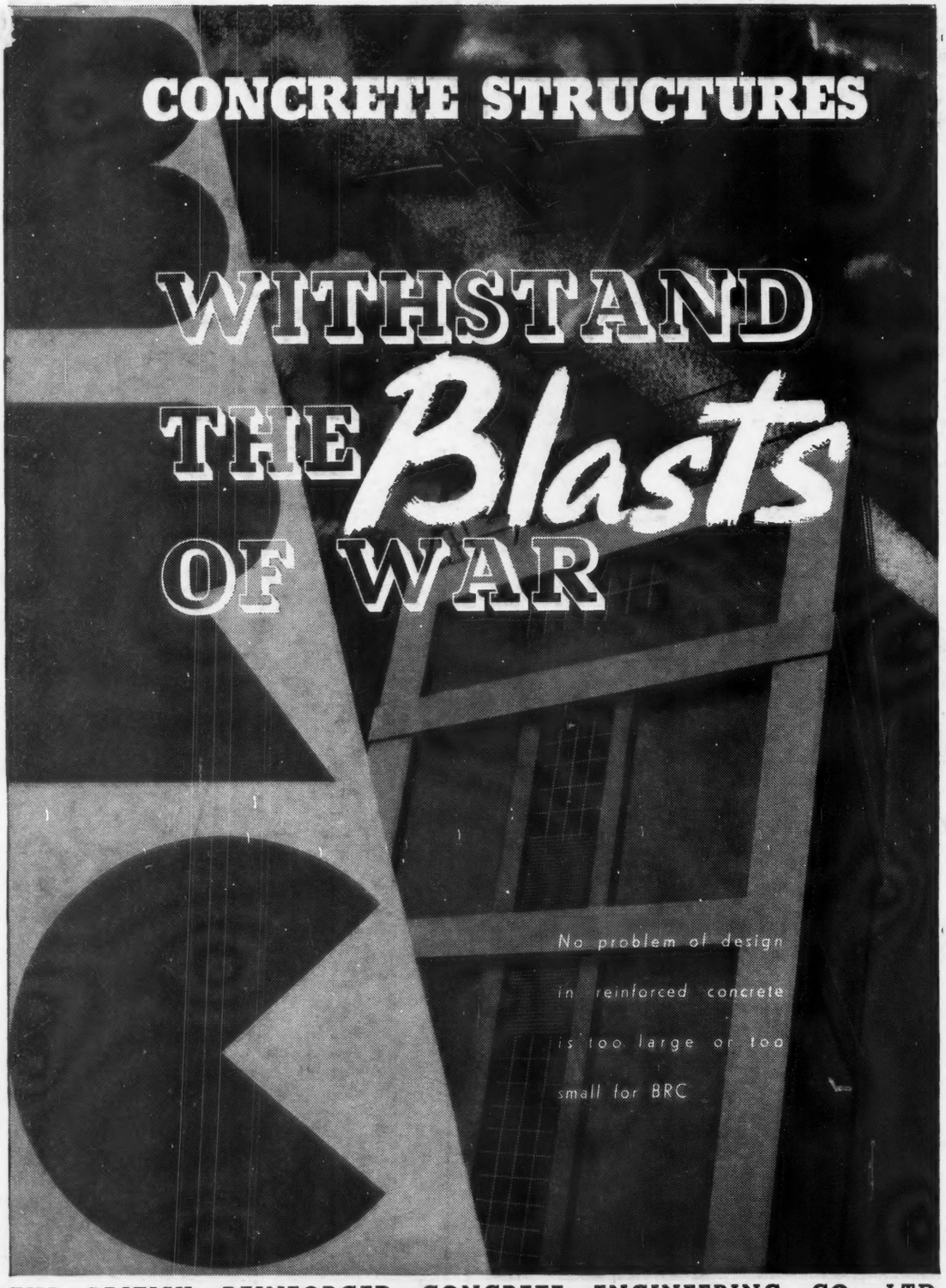

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